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ABSTRACT

The text includes 27 papers presented at the Illinois Statewide Institute for Educators of the Severely and Profoundly Handicapped. Papers address the following six topics (sample subtopics in parentheses): student and systems assessment (student evaluation and instruction, and an accountability system in behavioral programs); services to severely handicapped students (curriculum considerations, ancillary services, and service delivery systems); considerations for secondary level and vocational programming for severely handicapped students (vocational training and production supervision, and community transportation); materials evaluation; legal and administrative issues (P.O. 94-142--the Education for All Handicapped Children Act, and an administrator's perspective on programs for the severely handicapped); and personnel preparation (programs at Illinois State University, Northern Illinois University, Southern Illinois University, and University of Illinois at Urbana-Champaign). (CL)

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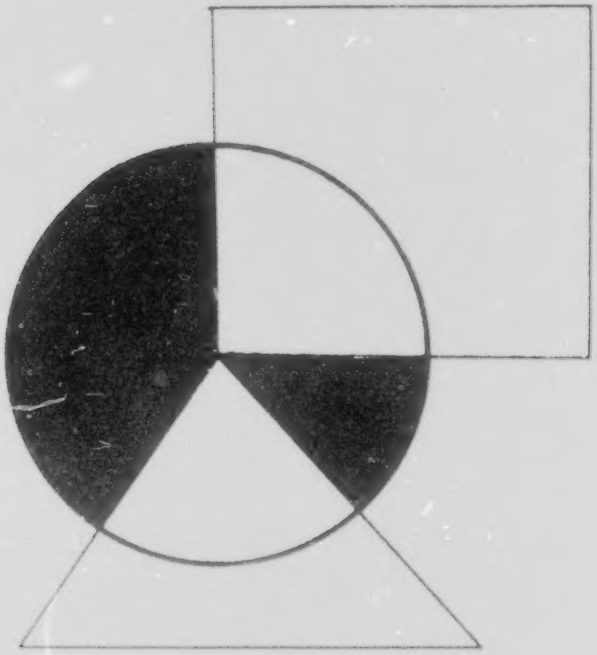
The Severely and Profoundly Handicapped Child

Proceedings from the 1977 Statewide Institute For Educators of the Severely and Profoundly Handicapped

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION



State Board of Education
Illinois Office of Education

Joseph M. Cronin
State Superintendent of Education

EA010857

The following articles do not necessarily reflect the opinion of the State Board of Education or the Illinois Office of Education.

FOREWORD

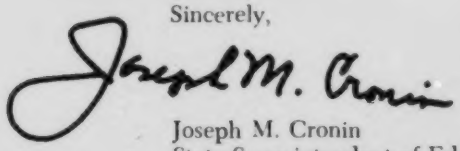
The following articles have been compiled from presentations given at the Statewide Institute for Educators of the Severely and Profoundly Handicapped. These articles are intended to be used as a reference for educators who are presently serving or will be providing educational programs for the severely and profoundly handicapped.

Appreciation is given to the following individuals for their contributions:

Edited by
Barbara Wilcox, Frances Kohl, Timm Vogelsberg
Department of Special Education
University of Illinois at Champaign-Urbana

Compiled by
Bobbie Reguly and Michael Hagen
Specialized Educational Services
Illinois Office of Education

Sincerely,



Joseph M. Cronin
State Superintendent of Education

THE SEVERELY AND PROFOUNDLY HANDICAPPED CHILD

Proceedings from the 1977 Statewide Institute for Educators of the Severely and Profoundly Handicapped.

STATE BOARD OF EDUCATION
Illinois Office of Education
Joseph M. Cronin
State Superintendent of Education

SPECIALIZED EDUCATIONAL SERVICES
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I. INTRODUCTION

The Severely and Profoundly Handicapped: Who Are They in Illinois?

MICHAEL HAGEN
Illinois Office of Education

A growing concern of special educators and parents has been with providing an appropriate education to all handicapped children no matter the severity of the disability. Over the past years, several court decisions and federal and state legislation has been given considerable attention to the constitutional right for all children to receive an appropriate education.

Court decisions of Brown vs. the Board of Education (1954), PARC vs. State of Pennsylvania (1972), and Mills vs. Board of Education of the District of Columbia (1972) have been instrumental in establishing the constitutional right for an education. These court decisions played a facilitating role in the passage of Public Law 94-142, the Education for All Handicapped Children Act of 1975. The purpose of the act is

> . . . to assure that all handicapped children have available to them, with the time periods specified in, a free appropriate public education which emphasizes special education and related services designed to meet their unique needs, to assure that the rights of handicapped children and their parents or guardians are protected, to assist states and localities to provide for the education of all handicapped children, and to assess and assure the effectiveness of efforts to educate handicapped children.

The State of Illinois has been a leader in the education of handicapped children with statutes mandating special education and related services for all types of handicapped children age 3 to 21 since 1972. However, this did not always include the children who are severely and profoundly handicapped. State legislation has been introduced which will remedy this situation to afford the opportunity for all handicapped to be provided with an appropriate education.

At the present time the State of Illinois does not define those children who are severely and profoundly handicapped. The state does, however, programmatically define the severely and profoundly handicapped. Three types of programs are used to define the severe and profound:

1. If because of his/her handicap, the special education program of a district is unable to meet the needs of a child, he/she may be placed in a state approved nonpublic special education program under Article 14-7.02 of *The School Code of Illinois*.
2. If a child is in need of extraordinary special education or related services, he/she may receive additional services through the use of Article 14-7.02a of *The School Code of Illinois*.

In both these cases the State of Illinois defines these children as severely and profoundly handicapped. During the 1976-1977 school year, a total of 11,780 children under Article 14-7.02 and 14-7.02a of *The School Code of Illinois* were placed in state or out-of-state facilities, or public school programs.

3. Also children residing in facilities operated by the Department of Mental Health/Developmental Disabilities (DMH/DD) have been defined as severely and profoundly handicapped. There is a total of 2,753 children classified as severely and profoundly handicapped 3-21 years of age in DMH/DD facilities.

For the purpose of determining the number of severely and profoundly handicapped children in the State of Illinois, Table I is designed to give an overall data base for handicapped children in all handicapping

TABLE I
Handicapped Children Served by Special Education Programs 1976-77
Aged 3-21

Handicapping Condition	Number	Percent of Total School Population	Percent of Total Number of Handicapped Served
Trainable Mentally Handicapped	10,367	0.3906	4.57
Educable Mentally Handicapped	35,262	1.3285	15.55
Physically Handicapped Crippled	3,325	0.1252	1.44
Multiply Impaired	1,024	0.0485	0.45
Learning Disability	57,202	2.1552	25.23
Visually Impaired	1,544	0.0581	0.68
Hard of Hearing	1,772	0.0667	0.78
Deaf	1,996	0.0852	0.88
Deaf/Blind	90	0.0033	0.04
Speech Impaired	79,642	3.0007	35.12
Educationally Handicapped	14,792	0.5573	6.52
Behavior Disordered	17,645	0.6648	7.78
Other Health Impaired	2,069	0.0779	0.91
Department of Mental Health and Developmental Disabilities Coerated Residential Programs			
Developmentally Disabled	2,482	0.0935	1.08
Emotionally	271	0.0102	0.11
Total	229,483	8.6459	100.00

areas 3-21. The data represent children placed in public school programs, nonpublic in-and out-of-state, children placed in facilities operated by the Department of Children and Family Services and the Department of Mental Health and Developmental Disabilities. Table II is a breakdown of the number and percent of handicapped children placed in special reimbursement programs, 14-7.02 and 14-7.02a of *The School Code of Illinois* which have been discussed earlier as severely and profoundly handicapped.

TABLE II
Children Placed in Programs Reimbursed Under Sections 14-7.02 and 14-7.02a of The School Code of Illinois

	Number	Percent of Total School Population	Percent of Total Number of Handicapped Served
Private School—Section 14-7.02			
Residential			
Out of State	410	0.0154	0.1808
In State	1,871	0.0705	0.8252
Total	2,281	0.0859	1.0060
Day Placement			
Out of State	None	None	None
In State	4,999	0.1883	2.2048
Total Private School	7,280	0.2742	3.2108
Extraordinary—Section 14-7.02a			
Public School	4,500	0.1695	1.9847
Total Children Placed Under Sections 14-7.02 and 14-7.02a	11,780	0.4438	5.1955

In considering the data presented in Tables I and II one should be aware of the fact that a portion of the population of children being served in day school placement would be classified as trainable mentally handicapped. It is probable that most of the children placed in private residential facilities and served by public school programs reimbursed under Section 14-7.02a could be classified as severely and profoundly handicapped. Undoubtedly some of the children listed as behavioral disordered would fall within the range of severe and profound. One can not be certain what portion of the children designated as multiply impaired in Table I are also included in Table II. All children in DMH/DD residential programs are presumably severely and profoundly handicapped. In other words, it is very difficult using the records currently being kept by the Illinois Office of Education to deliniate a prevalence figure with any degree of confidence.

In order to make a rough estimate of the prevalence of severe and profound handicapping conditions in school-aged children, it would seem reasonable that the following types of children might be included in this classification:

1. Those served in private residential programs (0.0859%).
2. Those served by public schools under Section 14-7.02a (0.1695%).
3. Fifty percent of those served in private day placement programs (0.1371%).
4. All children in Department of Mental Health and Development Disabilities residential programs (0.1037%).

On the basis of these assumptions 0.4962% of children being served at present might be classified as severely and profoundly handicapped. As reported in Table I only 8.6459% of the children in Illinois are being provided special education and related services. Public Law 94-142 sets a maximum limit of 12% of the school population to be eligible for these programs and services. If this is a reasonable assumption, 3.35% of the school-aged population in Illinois are not being served. Assuming that a like number of the severely and profoundly handicapped are also unserved, it would appear that somewhat more than 0.4962% of school-aged children in the state might be classified as severely and profoundly handicapped or approximately five per thousand. ***This is an estimate that should be viewed with a great deal of caution.*** A reliable prevalence figure cannot be obtained until (1) a greater number of adequate programs have been in operation for some time and (2) a rigorous monitoring system is in effect.

A task force has been convened by Dr. Joseph M. Cronin, State Superintendent of Education, to study the education of severely and profoundly handicapped. Several recommendations have been made to the State Board of Education, but have not been formally adopted at this time. The following has been introduced as the state definition for severely and profoundly handicapped:

> Severely and profoundly handicapped children are those, ages 3-21 who exhibit: (1) severe emotional disturbance, (2) severe/profound mental retardation excluding those children functioning at the trainable mentally handicapped level or higher, or (3) two or more exceptional characteristics which in combination have a debilitating impact on the individual. These individuals, because of the intensity of their physical, intellectual, or social/emotional problems, or a combination of such problems, as determined by a multidisciplinary evaluation and staffing, need extraordinary educational, social, psychological and medical services over an extended period of time in order to maximize their full potential for useful and meaningful participation in society and for self-fulfillment.

The task force made several decisions with respect to developing a definition of the severely and profoundly handicapped. They were as follows:

1. Any definition should be viewed as temporary and reviewed periodically.
2. Major emphasis would be placed on the importance of a multidisciplinary evaluation and staffing to determine needed program and services.

3. While developmental levels and tasks should be taken into account in evaluating the severely and profoundly handicapped, simple IQ scores should not be the sole criteria for classification.
4. Children with a single, uncomplicated handicapping condition such as blindness or deafness would not be included in the definition.
5. Trainable mentally handicapped children as presently defined by statute and regulation would not be included.
6. Included in the definition would be severely emotionally disturbed and profoundly and severely retarded children.
7. Children with two or more seriously handicapping conditions would be included.

The Task Force on the Education of Severely and Profoundly Handicapped has been formed to draw together initial recommendations to the Illinois Office of Education for possible implementation. These recommendations are anticipated to facilitate a coordinated effort in developing procedures and program guidelines and standards for all agencies providing services to the severely and profoundly handicapped. With the passage of Public Law 94-142, states and local school districts must look very closely at the educational programs and facilities now used in providing services to the severe and profound and ask if these programs are a free appropriate public education in the least restrictive environment to meet his/her unique needs. This law will have far reaching effects on the education of the handicapped, and especially the children that have severe and profound handicapping conditions.

II. STUDENT AND SYSTEMS ASSESSMENT

Editors' Comments

The process of conducting an educationally relevant assessment of severely handicapped students is exceedingly complex. Both *what* is assessed and *how* the assessment is executed are markedly different from traditional, norm-referenced procedures. An ideal assessment of severely handicapped students would incorporate multiple measures of the skill in question, would assess performance on functional and ecologically valid rather than contrived and standardized tasks, and would translate directly into instructional goals and curriculum sequences. In addition, comprehensive assessment would include determination of functional reinforcing events, functional teacher cues or antecedents, and an inventory of performances expected by the student's social, physical, domestic, and community environments.

DuBose's paper describes an assessment procedure which utilizes both formal and informal evaluation and relates to instructional program development. The paper by Repp presents an approach to the management of student and systems assessment data. In addition, papers by York and Williams and Faber elsewhere in this volume relate to general assessment-instruction interface. For additional information on the assessment of severely handicapped students, the reader is referred to:

Gentry, D., and Haring, N. G. Essentials of performance measurement. In N. G. Haring and L. J. Brown (Eds.), *Teaching the Severely Handicapped*, Volume I. New York: Grune & Stratton, Inc., 1976.

Sailor, W., and Horner, R. D. Educational and assessment strategies for the severely handicapped. In N. G. Haring and L. J. Brown (Eds.), *Teaching the Severely Handicapped*, Volume I. New York: Grune & Stratton, Inc., 1976.

Evaluation and Instruction of Severely and Profoundly Handicapped

REBECCA F. DuBOSE
George Peabody College for Teachers

The Illinois Office of Education has invited us to participate in the "Statewide Institute For Educators of the Severely and Profoundly Handicapped". If the State had scheduled a conference of this nature five years ago, it would have drawn few participants. Why did they schedule this Institute in 1977? Illinois, like other states, must establish policies for providing free public education for all its handicapped children by 1978, or risk losing federal aid, a disaster no state wants to face. To be prepared for its obligations, the State has organized this Institute for the purpose of sharing knowledge about severely and profoundly handicapped children.

The Severely and Profoundly Handicapped

A basic mission of the Bureau of Education for the Handicapped has been to help the most severely handicapped children and youth become as independent as possible, thereby reducing their requirements for institutional care and providing opportunity for self-development. A task force created to develop strategies for achieving this objective formulated the following working definition of this group:

> Severely handicapped children are those children who because of the intensity of their physical, mental, or emotional problems, or a combination of such problems, need educational, social, psychological, and medical services which will make it possible for them to maximize their full potential for meaningful participation in society and for self-fulfillment.

Sontag, Burke, and York (1974) provided a perspicuously behavioral description of the severely and profoundly handicapped as:

> Those who are not toilet trained; aggress toward others; do not attend to even the most pronounced social stimuli; self-mutilate; ruminate; self-stimulate; do not walk, speak, hear, or see; manifest durable and intense temper tantrums; are not under even the rudimentary forms of verbal control; do not imitate; manifest minimally controlled seizures; and/or have extremely brittle medical existences (p. 21).

The extent of the handicapping conditions in one group of severely handicapped children can be seen in Table I.

These children were evaluated as a part of the Model Vision Project's diagnostic services to severely handicapped children with vision as a major handicapping condition. As can be seen, vision was their major handicapping problem, but equally deficient were mental abilities, followed by a number of other serious problems. These statistics point out the multiplicity of problems the severely handicapped child brings to the learning environment.

TABLE 1

Kind and Degree of Handicapping Conditions Present in Sample Screened for Model Vision Project

Code No. of Child	Vision	Mental Retardation	Physical Impairments	Social Retardation	Cultural Retardation	Total
01	4	3	0	2	0	9
02	4	4	3	2	0	13
03	4	3	0	2	1	10
04	4	4	4	2	1	15
05	4	2	1	0	0	7
06	4	1	0	1	0	6
07	1	2	2	1	0	6
08	4	3	1	2	1	11
09	4	3	2	4	1	14
10	1	4	2	1	0	8
11	2	3	1	1	0	7
12	3	3	2	1	0	9
13	2	3	2	2	1	10
14	3	1	3	1	4	12
15	4	2	1	2	0	9
16	4	4	4	2	1	15
17	1	4	4	3	1	13
18	4	4	4	3	1	16
19	1	0	0	1	0	2
20	4	3	4	3	1	15
21	4	4	0	3	1	12
22	2	3	0	2	0	7
23	4	4	0	3	1	12
Total	72	67	40	44	15	238

Evaluation Code

0 No significant problem
1 Mild problem: 75-90% functional
2 Moderate problem: 50-74% functional
3 Severe problem: 25-49% functional
4 Profound problem: 0-24% functional

BEH estimated the population of severely handicapped children and youth to number almost 1.5 million, a staggering number in light of the monumental services needed to meet the needs of these children.

The implications of public education for severely handicapped children presents a plethora of problems that must be addressed if programmatic plans are to be more than another stop gap measure for immediate relief to a precipating problem. The portion of the problem to be addressed in this presentation is that of evaluation and instruction of the severely and profoundly handicapped.

Evaluating the Total Person

From the definitions cited above it is clear that we must look at the whole being and his ecological system. One can isolate a behavior in order to study it, but to fully understand a behavior one must put it in perspective and understand how other factors affect the target behavior. All must be viewed in light of the

total child. Evaluation then, is the assessment of an ecological system as it exists around the individual. With both time and knowledge as limitations, factors to be addressed are those most likely to affect the education of the individual.

A first priority in any evaluation is to formulate the questions to be answered. Four basic questions underlie the assessment of each behavioral domain. The first question sets the stage for the questions that follow: *Is the child doing what he is expected to do?* The answer to this question comes through a comparison of the child's behavior to a given standard. If vision is being measured, visual behavior is compared to performance on recognized Snellen standards. If intelligence is under study, the individual's performance is compared to norms of his age mates. The answer to this question provides a frame of reference for the second question: *What is the child doing?* In traditional testing this is referred to as an achievement question. It is a measure of one's progress along a continuum. Criterion-referenced testing answers this same question. Results tell one what portion of a skill the individual has acquired. An important consideration that must be kept in mind in assessing achievement is to view the data in terms of the results gathered from the first question. For example, if a ten-year-old child has a mental age of six years, one must view his performance on tasks requiring cognition in light of behaviors expected of six-year-old children.

The third question is a move toward specificity: *If the child is not achieving as expected, then why not?* This diagnostic question is also an ecological question as it involves a close examination of the many factors in skill acquisition. If the child can not feed himself with a spoon (achievement) the evaluator seeks to discover why he can't. Does he have the necessary grasp behavior? Does spasticity prevent him from manipulating common household spoons? Given a spoon with a different grip, can he complete the task independently? Information gathered at this point leads to programming. One can say what the child can do, where the behavior falls along a continuum, and why he is behaving in this manner. Evaluation can not stop here. If school systems are to receive federal financial assistance, school districts must assure that each handicapped child will be provided a written individualized educational program with the plan to be reviewed at least annually and revised when necessary.

The dictum requires a critical fourth question: *How can we teach the child the skills he needs to acquire?* This question is the special educator's challenge and must be given our best efforts. No longer are test scores and inept recommendations acceptable. The child's evaluation and program must include what to teach, how to teach, who should teach it, when it should be taught, and what should be an acceptable performance. The only way to answer this question is to have actually pre-tested the procedure before recommending it. This involves determining the materials, conditions and many other variables that go into an individualized program. At this point the child's curriculum is built and the evaluator's task is to determine the objectives, the content, and the organization of that content.

Measuring the Behavioral Repertoire

Both formal and informal procedures are needed in the assessment of severely handicapped children. The use of formal intelligence testing with severely handicapped children has been profusely criticized by many in the field. Some simply say, the children are untestable; others say the tests do not give a fair picture of the child's behavior. For a number of reasons our evaluation teams at Peabody College Child Study Center have used infant intelligence scales as one measure of the mental abilities of severely handicapped children. As reported elsewhere, early results of 28 severely handicapped children tested over a five year period proved to be highly predictive of later test scores (DuBose, 1977). In an analysis of tasks on infant scales, we found them to sample a complete range of sensorimotor schemas (Cooper, 1976). A data profile quickly pinpoints skills that should be included in the prescriptive program. The formal measures that have provided our staff with the most relevant data are presented in Table 2.

As noted in Table 2, formal measures in five domains have been included. At times other formal measures such as vision and hearing tests are included. Formal measures are used to answer all four questions posed earlier. Tools are selected to give the team members the kinds of information needed on each child. At times it is necessary to adapt items, this is done and reflected in the child's report.

Of equal importance are the informal procedures used in answering the four questions. Included among the informal measures are a number of screening tests that serve to provide more specific direction for later formal testing. Informal testing is particularly critical in answering diagnostic and programming questions. Informal assessment permits insight into the child's acquisition of a new task, the process he uses to solve problems, the transfer of learning from one material to another, the carryover, maintenance, generalization and reinforcement strategies that work best for him. These vital factors reflect the child's learning style and provide a view of his functioning under different conditions. Informal measures allow assessment of the child in the milieu most inducive to the utilization of a particular skill. Language is assessed during interaction with favorite objects, self-care is assessed while dressing, eating and toileting. In order to informally assess cognitive-adaptive skills, we developed a very simple measure for teachers to administer in their classrooms using a number of materials they commonly use on a daily basis. This measure, the Developmental Activities Screening Inventory, (DuBose & Langley,

1977) correlates with mental measures above the .90 level. The instrument includes adaptations for visually impaired and nonlanguage children functioning between six and 60 months.

Planning An Instructional Program

The fourth question proposed previously addresses the issue of setting instructional objectives. Objectives can best be set in cooperation with the teacher or caregiver responsible for carrying them out. It is ludicrous to set objectives in isolation from those who must carry them out. These persons know important facts about the child and conditions of the environment that will be critical to the successful completion of the objectives.

Objectives should be developed after consideration of a number of factors: activities the child enjoys, the level of problem solving, the learning procedure that is most successful, the developmental level of the child, the precursors of the task the child already has, the sequence of teaching the task, the child's expected learning rate, the materials to be used, the place for teaching the task and the person implementing the program.

Measurements of gain toward meeting objectives forms the basis for follow-up evaluations. For this reason it is critical that objectives be carefully planned and obtainable within a given time reference. Objectives to be measured in the follow-up evaluation should be noted on a tracking form sent to the child's local educational agent six months after the evaluation and instructional programs have been received. The tracking form allows the evaluation team to assess the efficiency of its efforts as well as monitor the child's behavioral change. Needed program changes can be made without reassessment if the need is clear.

In general, objectives should include behaviors in all areas assessed and be written so that the teacher does not have to work with the child in a one-to-one setting to carry out the objective. Cluster teaching and group instruction have proven to be effective training environments for severely handicapped persons and are far more characteristic of the learning and living areas in which most of us go about our daily lives. At least some of the objectives should be carried out in conjunction with the child's peers.

In this paper four critical questions related to the evaluation and planning of instructional programs for severely and profoundly handicapped children have been addressed. Formal and informal procedures for use in the assessment process were reviewed. Finally, a process for translating assessment data into instructional programs was suggested.

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TABLE 2

Formal Assessment Instruments Used in Model Vision Project

Cognitive Development

- Bayley Scales of Infant Development
- Cattell Infant Intelligence Scale
- Columbia Mental Maturity Scale
- Detroit Test of Learning Abilities
- Haeussermann's Developmental Potential for Preschool Children
- Hiskey-Nebraska Test of Learning Aptitude
- Leiter International Performance Scale
- McCarthy Scales of Children's Abilities
- Merrill-Palmer Scales
- Pictorial Test of Intelligence
- Stanford-Binet
- Wechsler Preschool and Primary Scale of Intelligence

Language Development

- Developmental Sentence Analysis (Laura Lee)
- Developmental Sentence Types (Laura Lee)
- Environmental Language Inventory
- Environmental Pre-language Battery
- Inner Language Scale
- Northwestern Syntax Screening Test
- Preschool Language Scale
- Receptive-Expressive Emergent Language Scale
- Test of Auditory Comprehension

Motor Development

- Cerebral Palsy Assessment Chart
- Frostig Movement Skills Battery
- Lincoln Oseretsky
- Peabody Developmental Motor Scales

Social Development

- Adaptive Behavior Scales
- Cain-Levine Social Competency Scale
- Devereaux Social Scale
- Maxfield Buchholz Scale
- Primary Self Concept Scale
- TARC Assessment System
- Vineland Scale of Social Maturity

Screening

- Basic Concept Inventory
- Boehm Test of Basic Concepts
- Callier-Azusa Scale
- Denver Developmental Screening Test
- Developmental Activities Screening Inventory
- Preschool Attainment Record

An Accountability System in Behavioral Programs for the Severely and Profoundly Handicapped

ALAN C. REPP
Northern Illinois University
DeKalb, Illinois

In the last decade, there has been an increasing interest in holding persons accountable for mental health services they are paid to provide. Some of the reasons for this interest have been identified by Zusman (1972) and are: (a) assessment of cost-benefits, (b) recognition of the power of consumers who join together, (c) recognition of the power of third party payers to affect quality of programming, and (d) a means to prevent the loss of clients who might go to more effective service providers. Other factors are described by Grossman and Rowitz (1974) and include: (a) a monitoring aid to assist an administrator in assessing the effectiveness of activities of an agency (from Buchanan and Wholey, 1972), (b) a means of addressing the competitiveness of agencies vying for dwindling supplies of federal and state funds, and (c) an assessment of the extent to which an agency is meeting the service needs of the community it wishes to serve.

Interests in accountability are also increasing as a reaction to federal and judicial pressures. Many court cases have been decided in favor of clients who have not been provided treatment with these decisions resulting in some guidelines for documentation (e.g., Morales v. Turman, 1974; Williams v. Robinson, 1970; and Wyatt v. Stickney, 1972). Other pressures come from the Standards for Residential Facilities for the Mentally Retarded (Accreditation Council, 1971) which require that the facility (a) identify client needs, (b) establish priorities for meeting those needs, (c) identify programs to meet the needs, (d) assign staff responsibility, (e) review progress, and (f) make changes appropriate to the results of review (Crosby, 1976). Additional pressures come from Title XIX of the Social Security Act which makes funding dependent on meeting (by March 19, 1977) similar standards set forth by the Regulations for Intermediate Care Facilities for the Mentally Retarded (U.S. Dept. of Health, Education, and Welfare, 1974).

The purpose of the present paper is to provide a system of accountability that: (a) will allow one to monitor the progress of severely and profoundly handicapped individuals, (b) is based upon the ICF-MR and ACF/MR documents, and (c) is congruent with guidelines suggested by various courts.

Overview

Development

The system described was developed at the Georgia Retardation Center while the author was an administrator at the facility. Its purpose was to prepare the Center to meet all requirements of the two documents, and, in order to do so, three steps were necessary: (a) to analyze all requirements of the guidelines in such a manner that would provide a category *X* date-due matrix (Repp, 1976), (b) to write all policies necessary for implementation of the system and to rewrite or delete all policies so affected by the new system, and (c) to train managers of the student records.

Components

The recording system is comprised of six major components which are: (a) evaluations by the interdisciplinary team, (b) the Student Master Problem List (SMPL) which includes long- and short-term goals identified by the team, (c) the Student Priority Problem List (SPPL) which includes the short-term goals which are presently addressed, (d) the Staff Problem List (SPL) on which staff should list objectives of the students they are instructing, (e) the Monthly Student Progress Report (MSPR) which summarizes the progress on the priority problems for that month, and (f) the Status Review Progress Report (SRPR) which summarizes the student's progress either semi-annually or when there is a change of status (e.g., discharge).

Implementation

Interdisciplinary Team

Congruent with both guidelines, an interdisciplinary team was formed for each student and was comprised of direct care staff, parents, and discipline staff. While these individuals had many functions at the center, as a team they had five: (a) to evaluate students before admission, within thirty days of admission, and after every six months of residency; (b) to list on the SMPL the goals identified by the evaluations and to list on the SPPL the goals to be presently addressed; (c) to allocate activity and staff resources to facilitate meeting the priority problems; (d) to solve administrative problems interfering with progress, including staff training and scheduling; and (e) to report student progress monthly and at the time of a change in status.

Student Evaluation Tools

The evaluations provided information for the individual master problem lists and the subsequent treatment programs. Those used by Unit A were: (1) the Behavior Inventory which is a set of seven subtests in the following areas: cognitive/educational, physical/motor, social/recreational, occupational, language/communication, self-help, and maladaptive behavior;

(2) medical evaluations which consisted of a history and a physical examination; (3) discipline evaluations which provided detailed information about a student's behavior in each professional area. These evaluations identified objectives for the students, an appropriate treatment program, retest date, and the examiner; and (4) a unit inventory, which was to be comprised of daily-to-weekly records of the student's progress on each objective identified on the SPPL, and which therefore served as a pre-test, a continuous assessment tool, and a post-test providing information relevant to the appropriate of placement. All items on the inventory were written in an extended accompanying document according to Mager's (1975) criteria for an instructional objective: (1) statement of the performance, (2) description of the conditions or antecedent events for that behavior to occur, and (3) the criteria for task completion.

Records

SMPL. The SMPL describes the student's short-term and long-term goals in the seven areas described by the Behavior Inventory. Figure 1 is a sample of the

FIGURE 1

MANAGEMENT PLAN
STUDENT MASTER PROBLEM LIST
(to be typed)
Review Span from 1/77 to 7/77

John Doe
Unit A, Section I
888-88-8888
student identification

Area: (1 of 7) CE /Manager: Sam Smith

Prob #	Problem Name	Date	Status	Chg. Date
1	Teach to identify body parts	1/5/77	P	
2	Teach to match colors	1/5/77	X	
3	Teach to identify 10 common nouns	1/5/77	P	3/1
4	Teach to hang up coat	1/5/77	P	
5	Increase eye contact	1/5/77	X	
6	Increase effective use of leisure time	2/1/77	P	
3	Teach to identify 10 common community helpers	3/1/77	R	

SMPL and identifies: (a) long-term or inactive problems (X), (b) priority problems presently treated (P), (c) the student, (d) the review span of the present record, (e) the manager responsible for maintaining this record, (f) in which of the seven areas each problem is classified, (g) the problem number and name, (h) the date on which the problem is first entered on the SMPL, (i) the status of the problem as X, P, or resolved (R), and (j) the date during the review span on which the status is changed. Another form accompanies the SMPL and identifies: (a) the team members by name and title, (b) parental involvement in determining student objectives, (c) the program manager's name and signature, and (d) any programming restrictions (e.g., certain physical activities for specific health reasons).

In addition to the learning and instructional objectives in each of the aforementioned seven areas, a Health Care/Nursing Plan was developed and included goals and treatment plans in preventive medicine, dentistry, and nutrition.

SPPL. Figure 2 is a sample of the SPPL which describes the present priorities and provides feedback which should be used to assess program effectiveness. While the identifying information at the top of the form is like that of the SMPL, the SPPL form also identifies: (a) the activity designed to meet each priority problem (while each activity is written in a separate curriculum booklet according to Mager's (1975) criteria for instructional objectives, it is described here in abbreviated form to save space and to reduce time required to repeat lengthy descriptions of the same objective across several students); (b) the date a staff member is assigned the priority problem; (c) the name and title of the person responsible for implementing each activity; and (d) the initials of the responsible person and the date an activity is changed, or the person responsible is changed, or the problem status is changed.

24-hour schedule. The 24-hour schedule (not shown) indicates in 15-minute increments where a student should be programed each of the seven days of the week and provides independent observers an easy means of determining whether the students are really being provided the activities the SPPL indicates should be addressed. At the end of each review

FIGURE 2

MANAGEMENT PLAN
STUDENT PRIORITY PROBLEM LIST
(to be written in black ink)

JOHN DOE
Unit A, Section I
888-88-8888

Review Span from 1/77 to 7/77 /Manager: Sam Smith — student identification

Area	Prob #	Priority Problem Name	Activity	Date Assigned	Responsible Person/Title	Change Date & Initial
CE	1	Teach to	Given the command "point to	1/5/77	Jane Jones	
		identify body	(part)," student will point to		Special	
		parts	appropriate body part (arm, leg,		Education Teacher	
			neck, head, eyes, nose, mouth),			
			with 100% accuracy, 10 times,			
			2 consecutive days.			
CE	3	Teach to	Given 10 stimulus pictures,	1/5/77	Bill Baxter	3/1/77 SS
		identify 10	student will name each correctly		Attendant III	
		common	on command "what is this?",			
		community	5 times each with 90% accuracy,			
		helpers	3 consecutive days.			
CE	4	Teach to	On entering the classroom daily,	1/5/77	Jane Jones	
		hang up	student will independently		Special	
		coat	put his coat on the coat hook,		Education Teacher	
			for 20 consecutive days.			
CE	6	Increase	On teacher saying, "students now	2/1/77	Jane Jones	
		effective	have free time", student will		Special	
		use of	independently color, put puzzles		Education Teacher	
		leisure time	together, or look at books			
			60% of the time for 5 consecutive			
			days.			
CE	3	Teach to	Problem Resolved	3/1/77	Bill Baxter	
		identify 10			Attendant III	
		common				
		community				
		helpers				

span, this schedule, as well as the SPPL, is re-done and the one not in use remains in the inactive portion of the student's record.

Miscellaneous items. Also included in the student's record are such items as behavior modification and disciplinary measures of the type needing approval of the interdisciplinary team and/or the Human Rights Committee, statements of inappropriate placements, and visitations.

SPL. The Staff Problem List is similar to the SPPL and indicates the student with whom each staff member is to implement a particular activity. Following information identifying the staff, the SPL lists the problem numbers, names, etc., as they appear on the SPPL and, as such, serves as a means of accounting for each staff's time and effectiveness in meeting student objectives.

MSPR. Each staff member assigned a problem on the SPPL is responsible for a monthly account of the progress of each student on each objective. Figure 3 is a sample of the MSPR and includes: (a) the student's identification, (b) the dates covered by this summary, (c) the name of the manager, (d) the area, problem number, and problem name as indicated on the SPPL, (e) a summary of the student's progress the present month in subjective (overall impression) and objective (numerical) terms followed by the plan for what is to be expected during the next month, (f) an overall summary which may be made by the manager after compiling summaries from all staff, and (g) the signature of the program manager.

FIGURE 3

888-88-8888
Doe, John
Unit A-1

MANAGEMENT PLAN
MONTHLY SUMMARY PROGRESS REPORT
(to be typed)

Monthly Review Span from 2/1/77 to 3/1/77 /Manager Sam Smith — student identification

(OVERALL SUMMARY: AREA/COMMENTS at end of report)

Area	Prob#	Problem Name	Summary: Subjective/Objective/Plan
CE	1	Teach to identify body parts	S: John maintains some consistency in responses during special education class. O: Responded with 70% accuracy to arm, leg, head, eyes, nose, mouth; 40% accuracy to neck P: Continue to reinforce all correct responses
CE	3	Teach to identify 10 common community helpers	S: John is responding well to this task. He is enthusiastic about pointing to the pictures presented to him. O: Responded with 90% accuracy for all 10 pictures, 3 consecutive days P: Discontinue task
CE	4	Teach to hang up coat	S: John is reluctant to do this task independently. He needs to be supervised most of the time O: John hung his coat up independently 3 out of 20 days P: Continue task, observe staff member to determine a more effective method
CE	6	Increase effective use of leisure time	S: John is responding slowly to this task. He seems to enjoy free time, but doesn't expand on previous activities O: John used the record player 90% of free time and looked at books 10% of the time P: Continue task, introducing prompts as needed

Sam Smith
Program Manager

SRPR. Figure 4 is a sample of the Status Review Progress Report and serves a number of functions including: (a) a summary of the MSPRs, in Unit A this was done every six months and replaced the sixth MSPR, (b) when the student reaches majority, whether a guardian is appropriate and whether neces-

FIGURE 4

MANAGEMENT PLAN
STATUS REVIEW PROGRESS REPORT

888-88-8888
Doe, John
A-1

Review Span from 1/77 to 7/77 student identification

Purpose: 30 day/6 month/discharge/transfer/temporary /Manager: S. Smith

Overall Summary: Problems to be worked on/Problems to be changed (optional--end of report)

Area & Priority Prob.#	Problem Name	Summary: Subjective/Objective/Plan
Cognitive Educational 1	Teach to identify body parts	S: John has improved on this task, but still hasn't met criterion. O: Responds with 80% accuracy to all body parts. P: Continue task
Cognitive Educational 3	Teach to identify 10 community helpers	S: John did extremely well on this task O: John completed task with 90% accuracy for 3 consecutive days P: Task was discontinued 3/1/77
Cognitive Educational 4	Teach to hang up coat	S: John is steadily improving on this task. He still has difficulty in remembering to do this on his own. O: Out of 120 days total, John has independently hung his coat up 50 days. He went from 2/20 times from 1/1/77-2/1/77 to 12/20 times from 6/1/77 to 7/1/77. P: Continue task
Cognitive Educational 6	Increase effective use of leisure time	S: John has been motivated to use other free time activities, but still prefers the record player. O: John used the record player 50% of the time, colored 22% of the time and looked at books 28% of the time. P: Continue task

Overall Summary:
John has been steadily improving in most tasks. Teachers and staff agree that the present program is appropriate for his needs and that he should be extended for 6 months with community placement as a goal.

Sam Smith
Cottage Program Specialist
Name
Merit System Title

sary action has been pursued, (c) whether the student has been informed of his civil rights, (d) an overall evaluation of the relevancy and feasibility of the SMPL and SPPL, (e) a statement of the student's progress within the 30 days after admission, (f) appropriate discharge information including a summary of the student's progress, where (s)he is going to be programmed, and the name of the contact person at that agency, (g) a review for temporary (2 week) admissions, and (h) a review of progress when the student transfers to another unit within the facility.

Summary

The record-keeping program described here is a highly manageable and structured system that can be as simple or as detailed as a facility's administrator determines feasible for the staff to manage. In the unit for which the system has been described, an initial guideline of 100 items on the SMPL and 50 on the SPPL was set for each student (and was generally exceeded) but proved too time consuming for the records managers who were also discipline staff responsible for student programming. An adjustment to

approximately 25 items on the SPPL proved more manageable in terms of the large amount of daily and weekly data that had to be summarized and the number of objectives that had to be written on the MSPRs. Of course, this is simply an empirical problem that can be solved at any facility willing to accept feedback from its record managers.

Although the system was designed for and tested at a moderately large (500 bed) residential center, it can be adapted for day facilities, group homes, and public schools with very little effort and has been for a small day care center (40 students) and a group home. After a short pre-training, implementation, and follow-up training period, no problems have occurred.

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III. SERVICES TO SEVERELY HANDICAPPED STUDENTS

A. Curriculum Considerations

Editors' Comments

Up until very recently the attitude about special education and curriculum sequences for special needs students has been, "We have adequate curriculum sequences, let's adapt them for special education." This is an inappropriate solution. Curriculum sequences might be *forced* to fit the needs of mildly handicapped students, but will never be appropriate for severely handicapped students without major adaptation and revision.

York and Williams outline several basic strategies for developing curriculum sequences for severely handicapped students, delineate potential advantages and disadvantages of each approach, and offer a system for relating curriculum and ongoing assessment to Individualized Educational Programs required by P.L. 94-142. Examples from curricula based on developmental sequences and from those based upon analysis of the living environment and functional skills that the student will need to lead as normal a life as possible are provided. Combining developmental and criterion environment approaches would result in a curriculum where skills were sequenced from easy to difficult and each tied to a life function directly related to actual situations that students would expect to encounter.

Atkinson's article describes an "instructional package" approach to curriculum development and implementation. By using validated instructional materials that give specific instructions for teaching, reinforcement, data collection, and error correction, the classroom teacher can more effectively utilize the services of an untrained aide. The instructional package replaces the need for time consuming and often ineffective in-service training. As each instructional procedure is implemented by the aide, students develop the skills taught by the package, the teacher monitors the instruction but has more time to attend to other concerns, and the aide learns about direct instructional techniques through actual practice. Repeated use of different packages and instruction from the teacher will help the aide to generalize those skills learned while using the teaching package.

In the third paper of this section, Fieber presents assessment procedures and outlines curriculum based on cognitive development during the sensorimotor period, with a specific focus on the multihandicapped deaf/blind. The assessment and programming procedures described are well integrated and provide an excellent illustration of an early childhood curriculum organized around cognitive developmental theory.

In the final article, Carney et al present a working curriculum designed to train both basic social skills and the more complex skills required for acceptance into the social mainstream. Their sequences combine aspects of developmental and criterion environment approaches to curriculum development, and incorporate some functional alternatives for various responses. Sample training and data collection procedures are included in their appendices.

For further information on curriculum considerations, the reader is referred to:

Baldwin, V. L. Curriculum concerns. In M. A. Thomas (Ed.), *Hey, don't forget about me.* Reston, VA: Council for Exceptional Children, 1976.

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Curricula and Ongoing Assessment for Individualized Programming in the Classroom[1, 2]

ROBERT YORK and WES WILLIAMS
University of Vermont

Most educational systems are similar in that they attempt to perform the same basic functions:

1. Screen and assess students to determine eligibility for services and/or type of services required;
2. Select instructional objectives and curricula appropriate for students based upon assessment;
3. Design and implement instructional programs appropriate to those objectives; and
4. Measure and evaluate the results of instructional programs as they are implemented, providing formative data for program modification and summative data for reporting to parents, administrators and others.

These general functions are a necessary part of all educational systems whether they are intended to teach reading, math, toileting, or head control. Effective educational systems for the severely and profoundly handicapped are in various stages of rudimentary development. Some programs for the severely and profoundly handicapped are able to organize an educational system that delivers quality programs and services to students and others are not.

In assessing this situation we determined that there is a need for efficient ways to organize an educational system for screening/assessment, objective/curriculum selection and measurement/evaluation for the severely and profoundly handicapped. One way might entail placing students in longitudinal skill sequences and monitoring their progress through those sequences. These sequences of skills can be the basis for screening, assessing, selecting instructional objectives, and evaluating the results of instructional programs.

What is a Skill Sequence?

Skill sequences are hierarchies or progressions of behaviors which progress from zero skills to competent functioning in major developmental areas such as motor, communication, self-care, and socialization. Skill sequences can be designed to lead from zero, or almost zero skill level, in any developmental area to competent functioning. Similar to the mathematic concept of a number line, skills can be ordered along a continuum of increasing complexity. However, instead of being comprised of a chain of numbers, skill sequences are comprised of chains of skills. These skills can be converted into objectives for assessment, instruction and evaluation. Just as a number line can be infinitely divided to find another number between any two numbers, a skill sequence can be divided to find another skill or subskill. Placing each student within such a sequence of skills allows the formulation of a basic map of where we are and where we want to go. We believe that by mapping out where we were trying to go, we will be more likely to get there.

Developing effective and efficient skill sequences is not an easy task. Fortunately, most of us are in programs where we don't have to do the whole job, and we may use, adapt or refine available skill sequences. Depending upon your program, you may be looking at different sections of this zero skill to competency performance sequence. For severely handicapped students, we're generally working with the skills that you might expect to see in very young children; in most cases, birth to twenty-four or thirty-six months.

Why Use Skill Sequences?

We feel there are substantial advantages to using skill sequences. Some of these advantages are listed below:

1. Skill sequences provide a meaningful and functional way of identifying students. We believe that as educators we are in the business of building skills. This is especially true for educators of severely handicapped students. The focus of our identification and description of students should be based upon the presence or absence of specific skills. Not hypothetical constructs or general labels such as autistic, profoundly retarded or severely handicapped. Skill sequences allow us to define our population and group students for programs in terms of skills. An educational system which has a continuum of services may place students along the continuum on the basis of skills and chronological age. Skill sequences can help us define what skills are being taught in each component program of a continuum of services so we can determine the program's entry and exit levels.
2. The use of skill sequences eliminates the need for a concept of "readiness." The teacher never waits for a student to be ready to learn a given skill, but begins to teach the requisite skills. Every student can be placed at some point along the skill sequence, and is ready to learn the next skill. We always have something to teach because our skill sequences progress from zero skills up to competent functioning. This allows us to answer a lot of arguments from people saying, "Well, I don't really think the

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[2] This manuscript first appeared in York, R., Thorpe, P., and Minisi, R. (Eds.) *Education of the severely and profoundly handicapped people*. Hightstown, New Jersey: Northeast Regional Resource Center, 1977.

student is ready to do this, that or the other," or "I think you should wait." In a skill sequence approach you define and teach requisite skills, instead of waiting.

3. Use of skill sequences facilitates the individualization of instruction. Instructional programs are individually tailored to each student based upon his or her placement within the skill sequences. Students are then allowed to progress through these sequences based upon their individual rates of achievement.
4. The use of skill sequences facilitates communication about and coordination of assessment, the selection of instructional objectives, and evaluation. These functions can be viewed as separate uses of one common skill sequence. Instead of using one system for screening, another for determining instructional objectives and a third for program evaluation, these particular functions can be tied together into a well-integrated and coordinated system. That is, determining students' functioning levels in a skill sequence screens those in need of services, delineates instructional objectives, and evaluates the effectiveness of a program based upon students' progress through the sequence.
5. The use of skill sequences helps to minimize the deleterious effects of student transfers to other classrooms and personnel turnover. Programs based upon long-term skill sequences have a continuity independent of the people who are currently involved as instructors or administrators. Teachers receiving students or replacing other teachers know exactly where the student was and where their instruction should begin. In addition, the use of long-term skill sequences gives the program stability and direction, and it is not necessary for teachers to haphazardly pick skills for instruction based upon some prevailing fad or hasty decisions made the night before.
6. The use of skill sequences can facilitate the development of more efficient curricula. That is, if instructors monitor student performance, they can obtain data which indicates the order in which skills are most readily acquired and which skills must be broken into finer sequences of component skills. A cycle of constructing the skill sequence, monitoring student performance . . . should lead to more efficient and valid curricula. It is only through such efforts that we can progress from "normal" developmental sequences, logically derived notions of sequences and laboratory research to empirically valid curricula (Williams, Cohen and York, in press).

Are There Different Kinds of Skill Sequences?

As we have examined skill sequences currently within the literature, we have found two major bases for the construction of these sequences. The first might be entitled, "Skill Sequences Based upon Normal Development." In this model, skill sequences are constructed based upon what the normal child is presumed to learn in what sequence as he or she develops. Such a sequence is considered to be relatively invariant among children as they grow up, and is thought to be a universal constant underlying a child's development. The second might be entitled, "Skill Sequences Based upon the Logical Analysis of the Living Environment or the Analysis of Required Functions." In this model, skill sequences are derived from the skills individuals must be able to perform to function in selected environments such as group homes, vocational placements and recreational sites. After delineating the basic skills required by selected environments, these skills are broken down into component skills which are ordered from simple to complex into an instructional sequence. Such an approach is commonly called task analysis. In this case the task to be analyzed is the ability to function within selected environments.

What are the Advantages and Disadvantages of Sequences Based Upon "Normal" Development?

Advantages:

1. People can understand a developmental basis and it is easy to explain. If someone asked, "What are you basing your curriculum on?" you can say, "We're basing it on normal development." Most people have some knowledge of normal child development and a familiarity with the general sequence of skills and the order in which they occur. At a minimum, other people can understand the basis of your sequences and you can understand it.
2. There is a theoretical base for the sequence. You aren't just picking a sequence out of the air, but have theories which provide a rationale for the sequence.
3. There is extensive literature available on normal child development, and this literature has been broken down both in terms of the sequence in which skills develop, and into major skill areas such as language, motor, and so on. You don't have to sit down and logically derive all of the skills from scratch. At least, with normal child development, you have a sequence to start from. You may then develop instructional programs for steps in the sequence and determine if students progress through these "normal" steps, and thus, determine if these steps are valid.
4. Normal developmental sequences begin at nearly zero skill level. Children are born with basic skills which are helpful in terms of survival and getting them started toward further learning. However, that repertoire is not very sophisticated. So normal development starts very low and has been delineated up to adult functioning.
5. A student's failure to progress through a "normal" developmental sequence may serve to diagnose sensory and motor impairments (Williams, and Fox, 1977).

6. Finally, many of you work in an interdisciplinary setting. This is often the only model that puts enough expertise together to develop comprehensive programs for the severely handicapped. Many members of these teams use normal development as the basis for developing programs for handicapped students. Generally, the normal developmental model is the dominant model among disciplines such as physical therapy, speech therapy, medicine and occupational therapy. Use of skill sequences based upon normal development may provide a compatible framework for professionals as they work together.

Disadvantages:

1. The appropriateness of sequences based upon normal development for severely handicapped students is often questioned. Obviously, the students we are discussing do not constitute a "normal" population. Most of them have been referred to us precisely because their development has not been "normal". They may have been out of their natural homes for years, without schooling and often manifest significant sensory and/or motor impairments. To expect these pupils to progress through a "normal" developmental sequence may be inappropriate and it is possible that the application of objectives based upon "normal" development is also inappropriate.
2. Normal development does not represent a teaching sequence. We need to know how to get a pupil to develop skills, not necessarily how those skills normally develop. Something has already gone wrong with normal development, we now need a way to sequentially teach the skills that have not yet been acquired. In some cases, the effective training sequence and the normal developmental sequence may not be the same. The crucial question for teachers may be, "How do you teach this skill?", not just "How does it normally develop?"
3. Basing skill sequences upon normal development does not provide for instruction on functional alternatives. In normal developmental sequences, walking is considered to be an objective in and of itself. To say that a normal child develops some skill does not necessarily relate to the more important question, "What is the function of that behavior?" For instance, the function of walking is to transport one's body through space. If we translate objectives based on normal development into their function, we are able to find alternatives which will work equally well for some students. For example, a wheelchair may be substituted for walking. Once we deviate from the normal objective, normal developmental sequences are not much help in determining a skill sequence for the objective.
4. Sequences based upon "normal" development may ignore functional applications of the skills they are attempting to develop. Such a sequence may fail to consider the requirements placed upon an individual to function in a particular environment or the age appropriateness of tasks.

What are the Advantages and Disadvantages of Sequences Based Upon Analysis of the Living Environment?

Advantages:

1. People can understand the analysis of living environments as a basis for developing skill sequences.
2. Construction of skill sequences following this basis is straightforward and pragmatic. The task to be performed is delineated and broken down into component skills.
3. Analysis of the living environment ensures that sequences are directly based upon the competencies required by individuals to function within a given setting or community. There is little chance of teaching skills which will not be directly relevant to an individual. Priorities can be determined and assigned to the skills found most essential to competent functioning. This represents an approach to delineating precisely what is necessary for survival and attempting to teach those skills.
4. Skill sequences based upon the analysis of the living environment are anchored at the upper end to some required and functional skill. The objectives of programs employing such sequences are clearly defined and have high validity. This facilitates the direct measurement of program effectiveness. Since these sequences are comprised of objectives directly related to those functional skills, program outcome can rapidly be reduced to strong accountability statements.
5. Since sequences based upon the analysis of a living environment are directly related to the functions an individual must perform, they are readily translated into functional alternatives. Use of a wheelchair to attain the transfer of one's body through space can be considered to be equivalent to walking if it fulfills the same function.
6. Sequences based upon the analysis of the learning environment make no assumptions about the students. It is strictly a matter of moving students from their current skill level to being able to function in some environment.

Disadvantages:

1. Sequences of skills necessary for function within a given environment may be unavailable. An instructor may be required to develop a sequence from scratch.
2. Logical analysis does not represent a teaching sequence. While it may clearly delineate the terminal object, the armchair analysis of the component skills may leave much to be desired. This appears to be particularly true of logical analysis extending downward to rudimentary skills, such as the motor and breathing components of speech.

3. A logical analysis may have to be individualized for each community or each living environment which is being analyzed. While this may be a substantial advantage in ensuring an individual's adjustment to any one environment, it may in fact inhibit generalization across environments. Applications of this approach may not take into account the range of living environments a student may experience. Thus, it is possible to envision a student training to function in one environment and failing in a slightly different environment.
4. Sequences based upon logical analysis may be at odds with sequences used by the staff with whom you must work. This may be a serious problem if you work within an interdisciplinary model and other members of that team base their sequences upon "normal" development.

What Kind of Skill Sequence is Best?

As with many things in education there doesn't seem to be a general answer to this question. The obvious answer is the skill sequence that works. While this is the kind of answer you might expect from an eleven year old, it's also the ultimate answer. Ideally, we should only use skill sequences that have been applied to the instruction of students and have been empirically validated as effective. Unfortunately, we don't yet have many such sequences or the decision rules to determine whether and when to apply them to a given student. So we must make do with approximations.

What Kind of Skill Sequences Should Be Used as Approximations or What Kind of Skill Sequence Do We Use?

We use a system of skill sequences called Minimum Objectives (MOs). As used here, minimum objectives encompass the minimum skills pupils should possess to function age-appropriately in their current and potential future life spaces. These skill sequences progress from zero skills to competent functioning and may serve as an educational program planning tool and as a basic metric for assessing pupil progress in a program of intensive special education. The basic framework for the system is the delineation of sequences of skills which lead from zero skills to competent functioning in the major developmental areas of motor, communication, self-care, and socialization.

In developing the minimum objective system we reviewed literature on child development and ascertained what skills a typical five and six year old performs. Next we determined which of those skills might be considered to be minimum skills. Finally, we delineated sequences of steps that lead from no ability to competent performance of those minimum skills. To accomplish this, we reviewed developmental literature to abstract out normal developmental sequences. In addition, we reviewed the training literature and abstracted out empirically verified training sequences.

We have attempted to design the minimum objective system to account for several of the major disadvantages to the use of sequences that are largely developmentally based.

1. We have attempted to anchor the sequence to minimum skills pupils should possess to function age-appropriately in their current and potential future life spaces. Thus, we selected and eliminated certain skills that occur in normal development based upon functionality. For example, functionality of the motor behavior of skipping could not be documented and the skill was deleted from the system. We designed our sequences to build toward the application of skills in tasks of daily living, not just developing isolated skills.
2. We have tried to present our skill sequence as a framework to be modified based upon student per-

FIGURE 1

Sample Matrix
For Functional Alternatives

L.R. = Least Restrictive
M.R. = Most Restrictive

Behavior	Function	L.R.----------> M.R. Independent Functional Alternatives			Dependent Alternatives	
Walking	Move body through space	Cane	Walker	Wheelchair unassisted	Wheelchair assisted	Carry student
Speak in sentences	Communication	Communication Board	Sign Language	Grunts Gestures Facial expression		
Pincer grasp	Manipulates small objects		Objects with special handles		Manipulate objects for pupil	
Tying shoes	Put shoes on snuggly	Loafers			Tie shoes for pupil	

formance. Thus, we hope to evolve an empirically verified sequence.

3. We have tried to develop a framework within the sequence that recognizes and promotes the selection of functional alternatives, when appropriate. This framework concentrates upon the functions that a student must perform as well as the behavior typically employed to accomplish that function (e.g., walking: move body through space). A sample matrix is presented in Figure 1.

In the matrix depicted in Figure 1 the behaviors gleaned from a normal developmental sequence are listed in the first column. The second column attempts to describe the function of each behavior. The description of the function is the vehicle for translating the behavior into functional alternatives. Independent functional alternatives are alternatives a pupil may use to perform the same function unassisted or independently. The alternatives within each row are listed left to right — least restrictive (L.R.) to most restrictive (M.R.). Dependent alternatives do *not* involve teaching the pupil to perform a skill which fulfills some function. They involve structuring the environment such that a caregiver or mechanical device performs the function for the pupil. For example, while teaching a two month old infant the enabling skills for walking, we carry the infant around. We provide the function of locomotion for the infant until the infant can perform the function him/herself. Programming involves transfer of the performance of selected functions from caregivers or mechanical devices to the pupil. When appropriate dependent alternatives are provided, there are zero prerequisites for an individual functioning in specified life spaces.

How Are Functional Alternatives Selected?

We need guidelines or rules for selecting functional alternatives. Selection of alternatives from a matrix may be guided by the principle of normalization and the principle of functionality. The principle of normalization involves: (a) teaching individuals within the limits of their abilities so that their behaviors approach those of their normal age-mates; (b) highlighting individuals' similarities and playing down differences; and (c) providing individuals with the ability to function effectively in normal environments. The principle of functionality involves: (a) teaching individuals skills they may use to operate on their environment; (b) teaching alternative skills that substitute as completely as possible for the "normal" skill; and (c) teaching alternative skills that allow independent functioning in the "normal" environment.

Combining these two principles yields the following guidelines for selecting functional alternatives:

1. The alternative should substitute as completely as possible for the "normal" skill;
2. The alternative should be as age-appropriate as possible;
3. The alternative should make the pupil as similar to "normal" as possible; and
4. The alternative should allow the pupil to operate as independently as possible in his/her environment and the "normal" environment.

Let's say we choose walking as our target skill. Generally, we should always pick the behavior indicated by normal development for carrying out a function. By definition, it will be the most normal and appropriate to his chronological age (CA) and generally the least restrictive and most functional. However, if it is determined that the pupil does not currently have the requisite skills to walk, an alternative must be chosen which is the most functional, normal, CA appropriate and least restrictive.

Choosing an alternative does not rule out efforts to teach the more normal skill. For example, an alternative such as a wheelchair may be used while a pupil is being taught to walk. For another example, if speaking is our target skill, and a pupil cannot speak, we must choose a functional alternative which serves the function of communicating. Again, we must search for the most functional, normal, CA appropriate, and least restrictive alternative. As we look at alternatives we may find advantages and disadvantages for each functional alternative. A communication board may be chosen over manual sign language because a less limited audience may understand the communication. However, a communication board may limit what can be communicated in terms of the amount of information that can be displayed, the speed of transmission, and the necessity for the board for communication. We could select several alternatives, such as communicating through facial expression, grunts, cries, and sighs to be used while the individual is learning to use a communication board or to speak.

It must be emphasized that our intent is not to derive matrices of functional alternatives and then fit the pupil to an existing alternative according to the pupil's sensory impairments, motor impairments, chronological age, and existing skills. Such an approach would imply that when a pupil does not quite fit a functional alternative, the pupil is not provided a program. Instead, we should devise and adapt functional alternatives to fit pupils.

What is being proposed is that skill sequences, derived substantially from normal development, be used as the basis for planning and evaluating pupils' programs. If the behaviors delineated by the [illegible]c skill sequences are not appropriate for some pupils with sensory and motor impairments, behaviors in those sequences may be translated into functions they perform and then the most functional, normal, CA appropriate, and least restrictive alternative may be selected.

The minimum objective system basically consists of a checklist of skills which may be used as the assessment record sheet. In a manual that accompanies the checklist, each skill on the list is written in the form of a behavioral objective with conditions under which

the behavior should occur and criteria. Figure 2 depicts a modified assessment sheet. In the first column the skills in the sequence are listed. Each skill may be checked off as having been mastered (the student performs the skill across people, places, tasks and time) or acquired (the pupil performs the skill but only in specific situations). If the student has not acquired the skill, we assess whether the pupil will perform the skill if given verbal prompts, gestural prompts, models, partial physical assistance or full physical assistance. If it has been determined that the student should use a functional alternative, the evaluator describes the alternative and assesses the students on the alternative. This system allows us to evaluate students on the basis of functions they should be able to perform and allows flexibility in how the function is carried out.

FIGURE 2

Modified MO Assessment Record Sheet.

Skills	Mastered	Acquired	Verbal Prompt	Gestural Prompt	Model	Partial Assistance	Full Assistance	Functional Alternative Describe	Mastery	Acquired	Verbal Prompt	Gestural Prompt	Model	Partial Assistance	Full Assistance

This model delineates two basic components of a pupil's educational program. The first component systematically teaches the pupil to perform functions him/herself in the most functional, normal, CA appropriate, and least restrictive manner possible. The second component insures that the environment is programmed to perform functions for a pupil which a pupil cannot, as of yet, perform.

How Do Skill Sequences Relate to Ongoing Assessment?

For a program employing a skill sequence approach, assessment involves determining what skills a pupil possesses in relation to a sequence of skills, and if his/her skill level is appropriate for his/her chronological age. If a discrepancy is found between a pupil's current skill level and that of his/her age-mates, instructional interventions are undertaken to eliminate or reduce that discrepancy. Finally, the pupil's progress within the skill sequence is measured to provide both formative and summative evaluations of program effectiveness.

What is Formative Evaluation?

Formative evaluations assess the pupil's short-term progress, such as daily and/or weekly progress toward acquisition of objectives in a skill sequence. Formative evaluation may be used to make daily assessments as to whether an educational program is effective, that is, to assess if, on a daily basis, the pupil is acquiring specified skills. We might devise a separate data collection system for each objective. For example, the number of minutes the student sits unsupported can be sampled, the number of tries or trials the pupil uses thumb in opposition with finger grasp can be counted, and the number of trials the pupil puts the objects in and out on verbal cue can be determined. Each day the data from each instructional session can be summed and recorded. If the formative assessment data indicates that a pupil is making adequate progress, the program may be continued as designed. If the assessment data indicates that the pupil has acquired or mastered an objective, the pupil may progress to the next objective in the sequence.

We believe that formative evaluation should take place within a data-based instructional program. If a test-teach instructional design is used, the pupil's daily performance within educational programs serves to quickly correct any initial assessment errors. Thus, the data-based educational program provides continuous assessment. In a test-teach instructional design, each day the teacher first tests the objective of concern and only teaches if the pupil errs. For example, if the objective is hand washing, the teacher presents the cue to respond and only teaches if the pupil fails to wash his/her hands correctly.

What is Summative Evaluation?

Summative evaluations summarize a pupil's acquisition of specified objectives from a skill sequence through a specified point in time. For example, we may evaluate and summarize the objectives pupils have acquired before educational intervention, such as at the beginning of a school year. At the end of the

school year, we may again summarize the objectives a pupil has acquired. We may then compare the initial summative evaluation with the later summative evaluation to document or assess student progress through a skill sequence.

Why Do We Need Assessment in the Form of Formative and Summative Evaluation?

Educational programs for students receiving special educational services will all be required to conform to standards set forth in the Education for All Handicapped Children Act, Public Law 94-142. This law mandates the development of a written Individualized Educational Plan (IEP) for every handicapped student. The following eight statements describe the required content of each IEP and the strong evaluation component that is necessary.

1. Statement of pupil's present level of educational performance.
2. Statement of annual goals.
3. Statement of short-term instructional objectives with projected timelines.
4. Statement of specific educational services to be provided, why these services are the most appropriate, when they are to be provided, who is to provide them, and the specific intervention strategies to be implemented.
5. Statement specifying extent to which the pupil will be able to participate in regular program.
6. Specification of projected date for initiation of services and anticipated duration of services.
7. Statement of objective criteria and evaluation procedures to determine whether instructional objectives are being achieved.
8. End of year summative evaluation of services provided to the pupil.

How Are Ongoing Assessment and Skill Sequences Used in the Individualized Educational Plan?

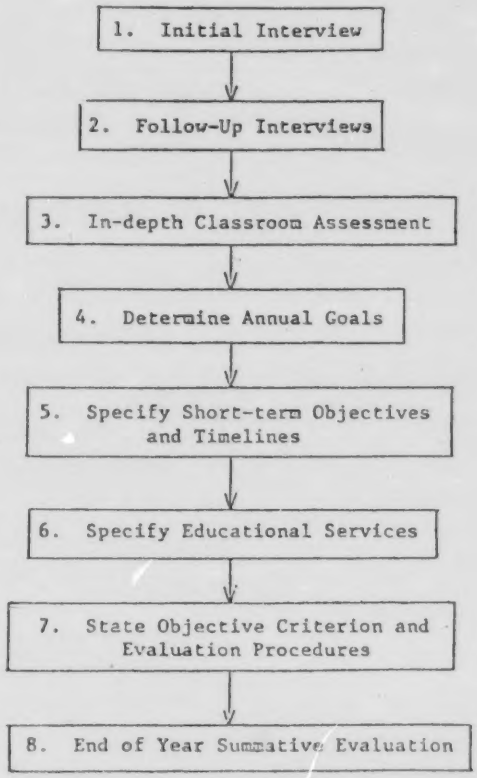
Data should be collected during the first few weeks of instruction concerning a pupil's functioning level within a skill sequence. These data may be summarized to complete the assessment of the pupil's initial level of performance. Further reference to the skill sequence will allow the selection of annual goals and short-term objectives with projected timelines for achievement. To complete a quarterly or end of the year summative evaluation, summarize the pupil's performance by checking off objectives a pupil has acquired in his/her progress through the skill sequence. Thus, a skill sequence can be used as a valuable planning document in the preparation of Individualized Educational Plans.

How Do I Develop an Individualized Educational Program Plan?

Figure 3 depicts an overview of the steps which may be followed in developing an Individualized Educational Program Plan (IEP) (Williams and Fox, 1977). The steps describe how to develop an IEP for pupils who are new to a program. To develop an IEP for pupils already in an educational program, the interview step may be modified and when appropriate deleted.

FIGURE 3

Developing An Individualized Educational Program Plan


1. Initial Interview
2. Follow-Up Interviews
3. In-depth Classroom Assessment
4. Determine Annual Goals
5. Specify Short-term Objectives and Timelines
6. Specify Educational Services
7. State Objective Criterion and Evaluation Procedures
8. End of Year Summative Evaluation

Initial Interview and Follow-up Interviews

The first step (Box 1) in developing an IEP is determining the eligibility of a pupil for special education. The initial interview may be the first contact made between education, the potential pupil, and the pupil's parents or parent representatives. During the initial interview the legal rights of the pupil in regard to obtaining an appropriate free public education should be explained, and eligibility determined. Specific areas requiring interdisciplinary expertise for assessment or developing the pupil's educational plan should be noted.

The educator should review the data obtained through the initial interview before conducting follow-up interviews (Box 2) and performing further assessments. Data from the initial interview should help determine which objectives in a skill sequence system should be given priority in assessment and if specified expertise should be called upon to help with in-depth assessment in selected areas, such as motor or communication. Follow-up interviews may be conducted

with a person who has in-depth knowledge of the pupil, such as a parent, parent representative, or teacher. During the course of the interview, the person with in-depth knowledge of the pupil should informally (in the course of pleasant conversation) be asked questions which pertain to the pupil's performance level on objectives within the skill sequence system. The interviewee may also be asked to elicit selected responses from the pupil. This procedure for initial assessment may provide more accurate and complete information on a pupil's skills than may be obtained through having a person unacquainted with the pupil perform a complete assessment. In addition, an initial assessment through follow-up interviews immediately involves parents or parent representatives in the development of their child's educational program. The assessment provides an opportunity for parent and educator to discuss appropriate educational objectives for the pupil and to develop a vehicle to facilitate continuity between home and school on pupil progress.

In-depth Classroom Assessment

After the in-depth assessment interviews with the parent or parent representative, the educator should perform further in-depth assessment within the educational program. Continuous in-depth assessment is accomplished once a pupil is in a data-based educational program.

After the interview, in-depth classroom assessment (Box 3) can begin on objectives indicated by the interview. Appropriate expertise may again be called upon to help design and evaluate the in-depth classroom assessment. As described previously, once the pupil is in data-based instructional programs, the formative data collected during the first three or four weeks of programming may be summarized to complete the initial summative assessment. This data may be attached to a pupil's individualized program plan to describe the pupil's initial performance level.

Determining Annual Goals

After the in-depth assessment is completed and summarized, the next step is to use this data to determine realistic annual goals for pupils (Box 4). There may be many objectives a pupil should be taught but there is a very limited time period. List the objectives a pupil should be taught and then prioritize them. Select the objectives given highest priority as your annual goals.

Not all goals will necessarily be achieved at the end of the school year. Some may be achieved in a month, three months, five months, and so on. Let's say we have selected two motor objectives and two communication objectives — two to be achieved by December and two by May.

The first three to four weeks of educational programming, upon which we based our initial summative evaluation, should have provided us with information on what realistic timelines might be for individual pupils. The objectives should first be listed in the order we expect a pupil to acquire them.

Objectives	Target Date	Actual Date
2.0 **Communication** — discriminates between four common toys (ball, block, pegs, doll) by indicating which one s/he wants	May	
2.0 **Motor** — sits on floor using arms/hands to maintain balance	May	
1.0 **Communication** — interacts with four common toys (ball, block, pegs, doll)	Dec.	
1.0 **Motor** — masters rolling over	Dec.	

Specifying Short-term Objectives and Timelines

When the goals have been determined, the next step is to state short-term instructional objectives with projected timelines for achievement (Box 5). The skill sequence should provide the short-term objectives. Again, we list the goals in the order in which we expect the pupil to obtain them. We then specify a skill sequence for teaching the objective which leads from the pupil's current performance level to acquisition of the objective. Next, we project a date by which each step of the skill sequence should be acquired.

Objectives	Target Date	Actual Date
2.0 **Communication** — Discriminate between four common toys (ball, block, pegs, doll) by indicating which one s/he wants	May	
2.5 Given a choice between ball, block, pegs, dolls and non-preferred objects and asked "What do you Want?" s/he points to ball, block, pegs, doll	May	
2.4 Points to doll when asked "What do you want?" and given a choice between a doll and a non-preferred object	April	
2.3 Points to peg when asked "What do you want?" and given a choice between pegs and a non-preferred object	Mar.	
2.2 Points to block when asked "What do you want?" and is given a choice between a block and a non-preferred object	Feb.	
2.1 Points to ball when asked "What do you want?" and is given a choice between a ball and a non-preferred object	Jan.	
1.0 **Communication** — Interacts with four common toys (ball, blocks, pegs, doll)	Dec.	
1.4 Self-initiates play with doll	Dec.	
1.3 Self-initiates play with pegs	Dec.	
1.2 Self-initiates play with blocks	Nov.	
1.1 Self-initiates play with ball	Oct.	
2.0 **Motor** — Sits on floor using arms/hands to maintain balance		
2.5 Remains in position until task (such as feeding) is completed	May	
2.4 Remains in position 10 minutes	Mar.	
2.3 Remains in position 5 minutes	Feb.	
2.2 Remains in position 3 minutes	Feb.	
2.1 Remains in position 1 minute	Jan.	
1.0 **Motor** — Masters rolling over	Dec.	
1.6 Rolls from stomach to back	Dec.	
1.5 Rolls from stomach to side	Nov.	

1.4	Rolls from side to back	Nov.
1.3	Rolls from back to stomach	Oct.
1.2	Rolls from back to side	Oct.
1.1	Rolls from side to stomach	Sept.

The short-term objectives may be depicted on timelines as in Figures 4 and 5.

FIGURE 4

Placing Objectives on a Rate Line

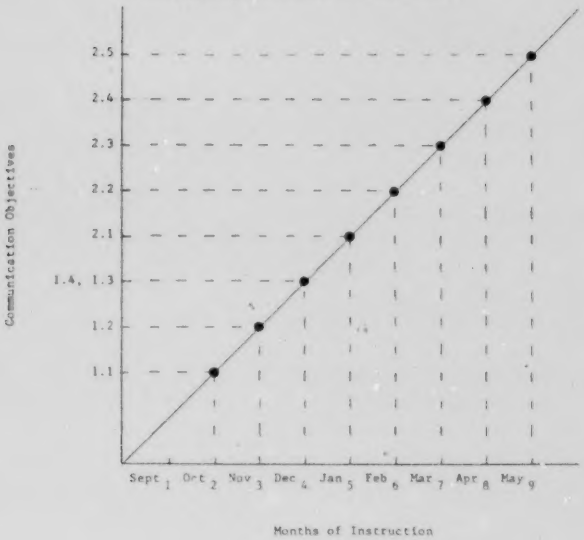
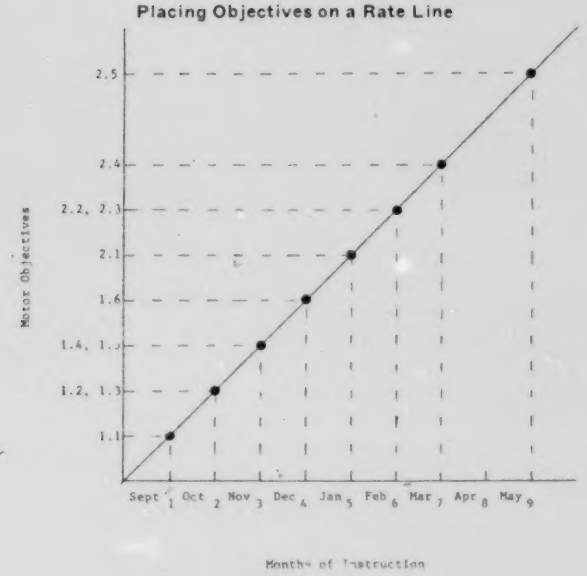


FIGURE 5

Placing Objectives on a Rate Line



Specifying Educational Services

The next step (Box 6) is for the educator to specify in the pupil's educational plan what educational services must be provided by whom for how long to achieve the annual and short-term objectives. The lists or timelines of annual goals and short-term objectives may now be attached to the pupil's IEP.

Formative (daily) assessment may be used to determine if the timelines are being met and if program modifications are needed (Box 7). End of the year summative evaluations (Box 8) may simply involve presenting data which indicates which annual and short-term goals have been achieved.

In this model, a skill sequence system serves as the basis for assessment and program planning. Pupil progression through the skill sequence may be used as the basis for formative evaluation and the formative evaluation serves as the basis of summative evaluations.

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Programming for the Untrained Instructional Aide[1]

CHARLES M. ATKINSON
Western Washington State College

The proliferation of programs for the severely handicapped has been accompanied by various difficulties. One of the more obvious problems has been readily available manpower resources, many of whom are virtually untrained in direct instruction, and inexperienced in working with the severely handicapped. This lack of trained instructional aides has meant a great deal of effort must be spent in in-service training, often an expensive and time consuming activity that results in diminished instructional time with the severely handicapped learner. One possible solution to the problem of training the instructional aide is the instructional package as developed by Hofmeister and his associates at Utah State University Exceptional Child Center (1974).

Kapfer and Kapfer (1972) have defined the instructional package as a systemized way of delivering content and process to learners. In developing instructional packages to be used by paraprofessionals who teach the severely handicapped, Hofmeister and his associates have attempted to include everything that is needed for the instructional aide. The typical package includes instructions on how to set up a teaching session, step-by-step directions for carrying out the teaching sessions and a model which shows exactly how other teachers have taught the session. Most of the packages include printed material only, however, some packages include slides, cassette tapes, and sometimes films (Stowitschek and Hofmeister, 1975; Hofmeister and Reavis, 1974; Stile and Atkinson, 1976).

Each package provides the instructional aide with a direct instructional procedure (scripted format) for introducing and teaching an unmastered skill or concept to a severely handicapped learner. Correction procedures and techniques for practicing the new skill or concept are also specified for the paraprofessional. Learner management procedures are tied directly to the teaching sequences via suggestions for praising at specified points and suggestions for employing token economies within the teaching sequence. Also included are pre/post criterion referenced tests and administrative procedures for continuous monitoring of learner progress. Each of these formats and procedures are included in the Appendix of this paper.

Research and Development Procedures

An educational research and development (R&D) process is employed by the Exceptional Child Center programmers to help guarantee the effectiveness of completed materials. The R&D approach has been described by Borg and Gall (1971, p. 413) as the most promising strategy we now have for the improvement of instruction. Seven major stages in the Exceptional Child Center cycle are listed and explained briefly below.

1. **Definition of curriculum content.** During this first stage of the R&D cycle, instructional needs are analyzed and a search for materials already in circulation is conducted. Failure to locate relevant materials results in the development of a package prospectus.

2. **Development of a prototype.** The second stage of the R&D cycle is the construction of a prototype instructional package. The prototype embodies the concept analysis/operational analysis and instructional objectives specified in the package prospectus.

3. **Critique by experts.** Feedback for revision purposes is gathered at this stage from experts (e.g., teacher trainers) who are asked to evaluate the material from technical and instructional points of view.

4. **Programmer field test.** In this stage the package developer (programmer) takes the role of a teacher and uses the package with from three to five severely handicapped children.

5. **Volunteer field test.** After further revisions have been made based upon data gathered in stage four, volunteers are asked to interact with children using prototype materials, and further revisions are made in preparation for an individual *formative* evaluation.

6. **Formative evaluation.** In this stage of the R&D cycle, field test versions of the final packages are used in homes of volunteer parents and by paraprofessionals in day school programs. Data are gathered to identify sections needing revision prior to the final *summative* evaluation.

7. **Summative evaluation.** In this final stage, a second group of volunteer parents and paraprofessionals use the revised packages in their homes, schools, or other teaching assignments. Product effectiveness is determined via controlled experimental procedures.

Conclusion

It appears that the instructional package is a feasible method for involving untrained manpower resources (paraprofessionals, aides, parents, volunteers, preservice practicum students, etc.) in the direct instruction of severely handicapped learners. The teacher of the severely handicapped who utilizes instructional packaging to document effective instructional procedures will facilitate the involvement of other untapped instructional resources. By keeping instructional packages simple in both format (paper/pencil) and ma-

[1] Appreciation is given to Developmental Learning Materials, 7440 Natchez Avenue, Niles, Illinois, for the contribution of a portion of *A Program for Teaching the Independent Use of Zippers, Buttons, Shoes and Socks* for inclusion in this article.

terials, their application will be extensive and inexpensive in both cost and inservice training time.

Based upon the needs established in stage one of the R&D cycle, a wide range of content is possible, and packages may be developed for several purposes including initial instruction, remediation, or skill maintenance. This method of passing on effective teaching techniques to untrained manpower resources should result in generalization of the teaching techniques and the provision of effective instruction for more severely handicapped individuals.

For a list of the instructional packages currently available and information concerning present development efforts, write to Dr. Alan Hofmeister, Director, Outreach and Development Division, Exceptional Child Center UMC68, Utah State University, Logan, Utah 84322.

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Other Titles Included in TRAINING FOR INDEPENDENCE:

Counting of Objects
Identification of Coins
Independent Dressing Skills
Recognition of Functional Words
Retention of Important Oral Phrases and Numbers
Understanding of Functional Words and Phrases
When a Child Misbehaves

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INTRODUCTION

The purpose of this program is to provide you with specific and practical instructions for teaching the learner to

1. zip and unzip his jacket
2. button and unbutton his shirt
3. put on and take off his shoes and socks
4. tie and untie his shoes

It is recommended that you follow the instructions carefully. The instructional sequences in this program have been revised several times as a result of field tests with teachers, parents, and paraprofessionals. Our evaluation data indicate that the instructor does not need previous experience or specialized training to achieve good results.

It is important that a learner's first contact with new materials and programs be rewarding. You will increase his chances of success by following instructions carefully, especially those relating to the *consistent use of praise*. One of the most effective ways to become familiar with this program is to first teach it to another person (an older child or adult). The person acting as the learner should be instructed to make mistakes, particularly when a new skill is being introduced. These mistakes will give you a chance to practice the *correction procedures*, which are some of the most important instructional techniques used in the program.

Is the Learner Ready?

Success is more likely if the learner can

1. grasp small objects with the thumb and index finger (potato chips, small marshmallows, jelly beans, gum drops).
2. bring two objects together simultaneously and connect them (jar and lid).
3. push, pull, and hold small objects (small toy cars, crayons, pencils).
4. follow simple directions. ("Point to the . . . ," "Hold the top one," and so forth.) In addition, the learner should be able to understand such words as *push, hold, pull, up, down, top, bottom, edge, side*, and *turn*.

If these motor skills are inadequate, in many cases they can be developed during the course of these lessons. It is important, however, to pay particular attention to the correction procedure outlined on p. 3. In the event the learner's motor-skill problems prevent him from succeeding with the first lesson, temporarily stop teaching. Begin providing him with opportunities that will enable him to practice the skills mentioned above. Resume teaching the lessons once improvement has been made in the motor area.

If the learner is having difficulty following directions, it may be the result of misbehavior and/or inadequate language concepts. The instructor should refer to *When a Child Misbehaves** for information about dealing with behavior problems. The following are suggestions for instructing the learner whose language development is inadequate.

1. Use simple and consistent language. There are several ways to tell the learner to button his shirt. For example:

   Could you button your shirt now?

   Button your shirt.

   Let's see you button your shirt.

   Rather than using all three, it would be better to choose the simplest one ("Button your shirt") and use it consistently.
2. Use more demonstration, by either the instructor or another learner:

   Watch me button my shirt.
   (Button your shirt.)

   Now you button your shirt.
   or

   Watch John hold the zipper tab.
   (John holds the tab.)

   Now you hold the zipper tab.

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GENERAL DIRECTIONS

LENGTH: Work no longer than twenty minutes *each day* until the learner masters the lesson. A ten-minute session in the morning and another in the afternoon is an effective schedule. Allow the learner to color part of his chart after each session.

PLACE: Have a work space, comfortable chairs, and the materials ready at the scheduled time. When the learner gets ready to work, praise him. For example, say: "I like the way you get ready to work," or "I like the way you came so quickly."

PACE AND SUCCESS: If the learner is succeeding at the tasks but losing interest, speed up the lesson and/or reduce the session time.

If the learner is failing repeatedly and the correction procedures have *not* been successful, follow these three steps:

1. Return to an earlier task with which the learner was successful;
2. Have the learner complete this task, praising him for completing it successfully; and
3. Conclude the activity.

Do not return to a task that the learner repeatedly failed until

1. You have made sure the learner has the pre-skills necessary to complete the task. (Example: If the learner is having difficulty pulling up his zipper, make sure he can grasp small objects and follow simple directions.)
2. You have identified other alternatives that simplify the task. (Example: If the learner is having difficulty taking off his shoe, try using a larger shoe that can be removed more easily.)

PRAISING AND CORRECTING

Praising—Be Specific

When the learner gives a correct response, it is important to let him know exactly *what* he did. "Very good!" does not tell the learner exactly what he did correctly. Here are some better ways to praise the learner:

Great! That's the correct way to hold the button.

You are doing a good job pushing the button through the hole.

If the learner is having trouble or is making a lot of mistakes, keep encouraging him with comments like

Zipping is tricky, isn't it? I like the way you are trying so hard to zip.

Good try! You've almost put on your shoes by yourself.

Reward Badges and Learner's Chart

If a learner's achievements are to be meaningful, they must be recognized by others, particularly by those people important to him. Having the learner color his chart (p. 63) is a relaxed and positive way to complete a session. Once the learner has acquired a skill, the reward of a badge intensifies his sense of accomplishment. Both the charts and badges should also serve to remind adults important in the learner's life to give him attention when he does things correctly.

Correcting

Use these three methods to correct the learner:

TELL: When the learner has difficulty, *tell* him how to complete the steps. Then have him do it by himself, and praise him.

*Example**

I: **Hold the button.**

L: (Holds button.)

I: **Great! That's the way to hold the button!**

SHOW: If the learner is still having difficulty, *show* him how to complete the step. Then have him do it by himself, and praise him.

Example:

I: **Watch me hold the button.**

Now you do it.

L: (Holds the button.)

I: **You did a good job holding the button.**

HELP: If the learner is still having difficulty, *help* him. Take his hand and move him through the step. Then have him do it by himself, and praise him.

Example:

I: **Let's hold the button together.**
(Place your hand over the learner's.)

I&L: (Hold the button.)

I: **Now you do it.**

L: (Holds the button.)

I: **Nice going. You held the button by yourself.**

* *I* denotes the *instructor*.
L denotes the *learner*.
( ) denote what the instructor or learner is to do.

REDUCING HELP

The basic goal of this program is to help the learner to *independently* perform basic self-help skills. To achieve this goal, a method for systematically reducing assistance has been developed. The steps in this system include:

TELL-HELP: The learner is told what to do and provided physical assistance.

TELL-TOUCH: Once the learner successfully completes a task with help, he is again told what to do; physical assistance, however, is reduced to a touch.

TELL-POINT: When the learner successfully responds in the previous step, the instructor gives the command and points to what the learner is to do next.

TELL: The learner is told what to do; physical assistance is no longer provided.

The specific instructions for implementing this method of reducing help are included in the lessons.

Summary

When the learner makes a mistake, *immediately* tell, show, or help him complete the step correctly. Continue the procedure until he does it *by himself*. When he does, give him *immediate praise*.

INSTRUCTOR'S CHART

The Instructor's Chart (p. 61) is designed to help you keep an accurate record of the learner's progress. Instructions for filling in the numbered spaces follow.

Space 1: *Student's Name.*

Space 2: You may enter any information you wish to in this space (for example: the time you worked with the learner, his age, or his classroom teacher's name).

Space 3: *Date Started.* List the date on which you gave the beginning check for the skill listed in the first column.

Space 4: This note section may be used to list any additional information you feel may be useful. For example:

a. Common mistakes, such as starting with the wrong button
b. Special teaching problems, such as being stuck at a particular step
c. Time, for example, the number of sessions you have spent teaching the skill lesson

Space 5: *Date Mastered.* This space should record the date on which the learner was able to perform the skill independently on several successive occasions.

There are several lines at the bottom of the page to allow you to add other related skills (for example, the use of snaps or buckles).

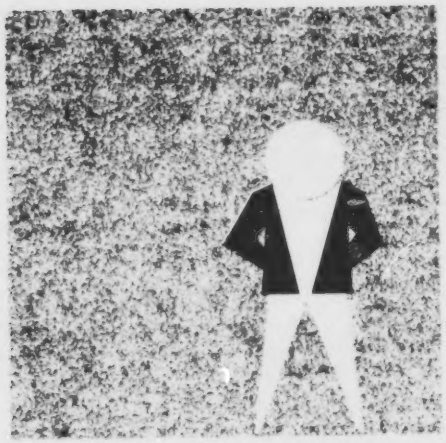
INSTRUCTOR'S CHART
Independent Use of Zippers, Buttons, Shoes and Socks

1 Roger Pierson
2 Ms. Downey Rm 4

SKILL	3 DATE STARTED	4 NOTES	5 DATE MASTERED
UNIT 1 LESSON 1 UNZIPPING	9/27	attending well to directions	9/30
UNIT 1 LESSON 2 ZIPPING	10/1	knows putting zipper end into the roster	10/5
UNIT 2 LESSON 1 UNBUTTONING	10/5		10/7

UNIT
one

ZIPPING



Getting Ready

MATERIALS INCLUDED IN THIS UNIT:

The Instructor's Manual: You are reading the Instructor's Manual. It tells you what to do and say as you teach each lesson.

The Instructor's Chart: You will keep a record of the learner's work on this chart (p. 61). Refer to p. 4 for more information on how to use the Instructor's Chart.

The Learner's Chart: The learner will color a portion of his chart (p. 63) after each session.

Reward Badges: Give the learner a reward badge when he successfully completes a lesson.

MATERIALS YOU WILL PROVIDE:

One of the learner's jackets that zips
Pencil and crayons for marking charts

Beginning Check

PURPOSE: This check enables the instructor to determine which lesson to begin teaching the learner.

DIRECTIONS: There are two lessons in this unit, one for *unzipping* and one for *zipping*. There is a check for each lesson.

Go through both checks with the learner. If he passes a check, he *will not* have to be taught the lesson that corresponds to that check. If he does not pass a check, he *will* have to be taught the lesson that corresponds to that check.

MATERIALS NEEDED:
1. Learner's jacket with a zipper
2. Instructor's Chart
3. Learner's Chart
4. Pencil and crayons for marking charts

Check for Lesson 1: Unzipping a Jacket

PART A

I: (Begin with the jacket on the learner, and have it fully zipped.)

Look here.

(Touch the zipper.)

Unzip your jacket.

PART B

I. (If the learner doesn't unzip his jacket, stand behind him and do the following.)

Watch me unzip the jacket.

(Unzip the jacket.)

Now you do it.

(*Do not* give any further help. *Do not* praise. Say nothing.)

NOTE: If the learner responded correctly in either Part A or Part B, he has passed this check. If the learner passed, mark the Instructor's Chart and allow the learner to color part of his chart. *Do not* teach Lesson 1.

If the learner did not respond correctly, teach Lesson 1.

Check for Lesson 2: Zipping a Jacket

PART A

I. (Begin with the jacket, fully unzipped, on the learner.)

Eyes right here.

(Touch the zipper.)

Zip your jacket.

PART B

I: (If the learner doesn't zip his jacket, stand behind him and do the following.)

Watch me zip the jacket.

(Zip the jacket.)

Now you do it.

(*Do not* give any further help. *Do not* praise. Say nothing).

NOTE: If the learner responded correctly in either Part A or Part B, he has passed this check. If the learner passed, mark the Instructor's Chart and allow the learner to color part of his chart. *Do not* teach Lesson 2.

If the learner did not respond correctly, teach Lesson 2.

DEALING WITH MISBEHAVIOR: If you have reason to believe the learner could have passed one or both of the checks but refused to try, then refer to "Following Directions" and "Paying Attention" in *When a Child Misbehaves.** After reading these sections, recheck the learner.

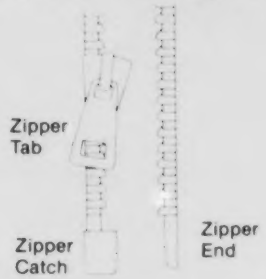
Important

Lesson 1 will help you teach the learner to unzip a jacket. Unzipping means pulling the zipper tab down and releasing the catch at the bottom so that the jacket can be taken off.

Lesson 2 will help you teach the learner to zip a jacket. Zipping means fastening the zipper catch and pulling the zipper tab up the front of the jacket.

Terms Check:

The terms *zipper tab, zipper catch,* and *zipper end* are used in the lessons. The learner should know each term *prior* to beginning the lesson. Hold this picture in front of the learner and identify the parts of the zipper with him.



(Point to zipper tab.)

I: This is the zipper tab.

(Point to zipper catch.)

This is the zipper catch.

(Point to the zipper end.)

This is the zipper end.

Let's see if you can find these on your jacket. Ready? Find the zipper tab.

L: (Touches the zipper tab.)

CORRECTING MISTAKES: Remember *tell, show, help, praise.* If the learner has trouble, *tell* him how to do it. If he still has trouble, *show* him how to do it. If he still has trouble, *help* him do it. *Praise* him when he does it by himself.

I: Find the zipper catch.

L: (Touches the zipper catch.)

I: Find the zipper end.

L: (Touches the zipper end.)

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LESSON 1 Unzipping a Jacket

MATERIALS:
1. Learner's jacket with a zipper
2. Instructor's Chart
3. Learner's Chart
4. Pencil and crayons for marking charts
5. Reward badge

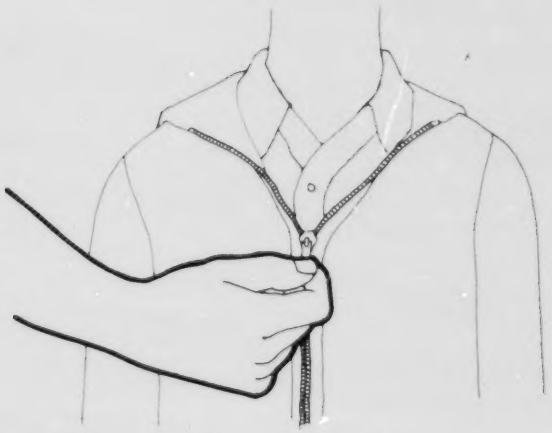
NOTE: Until the learner can unzip his jacket on his own, teach Lesson 1 *each day.*

DIRECTIONS: Begin with the jacket on the learner. *The zipper tab should be pulled up three-quarters of the distance to the top of the jacket opening.* Stand behind the learner.

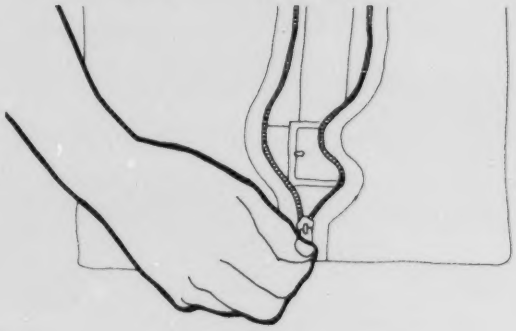
STEP A

I: **I will help you learn to unzip this jacket. Look here.**
(Hold the zipper tab.)

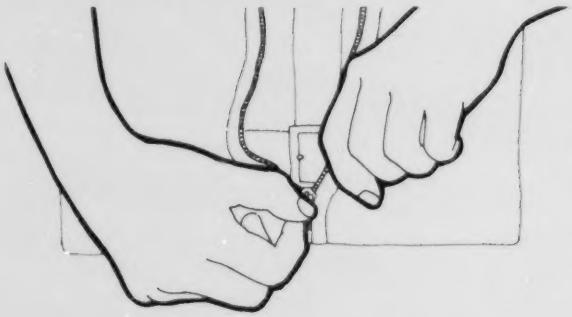
Hold the zipper tab with this hand.



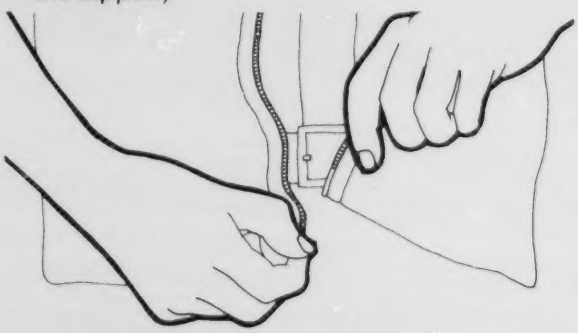
I: **Then, I slide the zipper tab down this way.**
(Pull tab down to the end, *but not off* the track.)



I: **Now, I hold the other side of the zipper with this hand.**
(Hold the other side of the zipper about midway between top and bottom.)



I: **Now, I hold and pull *up* on this side of the zipper while pulling *down* on the tab.**
(Pull down on the tab, *up* on the side of the zipper.)



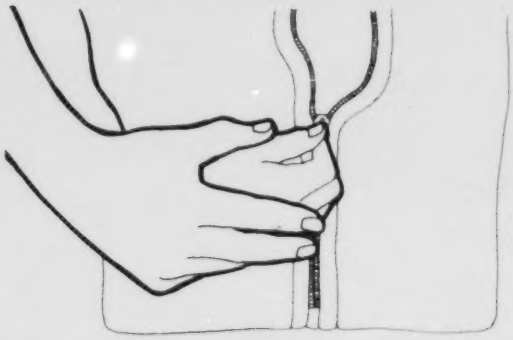
I: **There! I unzipped the jacket.**

STEP B Tell-Help

I: (Rezip the jacket.)

Now, let's do it together. I will help. First, we hold the tab with this hand.

(Help the learner hold the tab with the thumb and forefinger of one hand.)

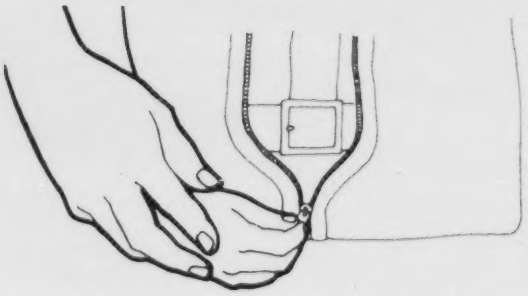


L: (Holds the zipper tab with instructor's help.)

TO CORRECT: Remember *tell, show, help, praise.* If the learner has trouble, *tell* him how to do it. If he still has trouble, *show* him how to do it. If he still has trouble, *help* him do it. *Praise* him when he does it by himself.

I: **Now, we slide the zipper tab down to the bottom.**

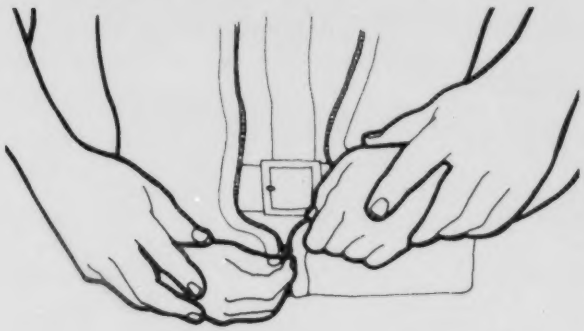
(Slide the zipper tab to the bottom, *but not off* the track.)



L: (Slides zipper down, *but not off* the track, with the instructor's help.)

I: **That's the way to slide the tab! Next, we hold the side of the zipper with this hand.**

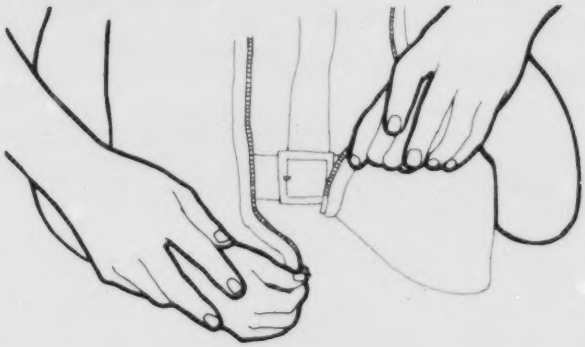
(Help the learner hold the side of the zipper with the thumb and forefinger.)



L: (Holds the side of the zipper with the instructor's help.)

I: **Now, we hold and pull *up* on this side of the zipper while pulling *down* on the tab.**

(Help the learner unzip his jacket.)



L: (Unzips his jacket with the instructor's help.)

I: **There, we did it! We unzipped the jacket.**

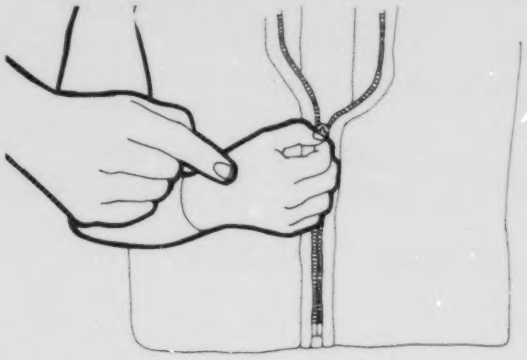
(Repeat Step B until the learner correctly completes each part of the step with your help. When he does, proceed to Step C.)

STEP C Tell-Touch

I: (Rezip the jacket.)

Let's try unzipping your jacket again. First, hold the tab with this hand.

(Touch the hand that will hold the tab.)

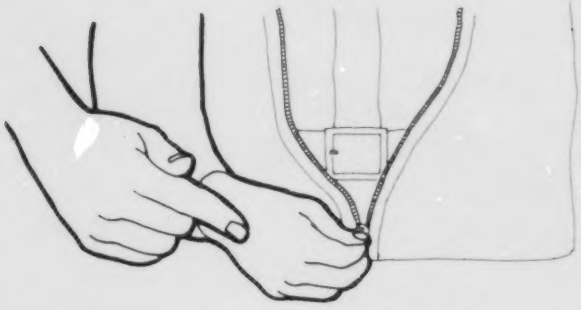


L: (Holds the tab when his hand is touched.)

REMEMBER: If learner makes a mistake, *tell, show, help, praise.*

I: You did a nice job holding the tab! Now slide it down to the bottom.

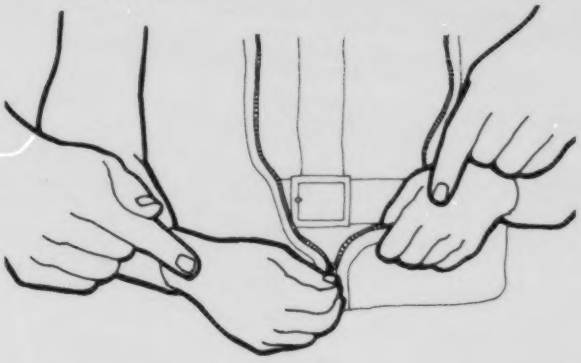
(Touch the hand holding the tab.)



L: (Slides the tab to the bottom, but not off the track.)

I: Excellent. You're getting good at sliding the tab. Now hold the side of the zipper with this hand.

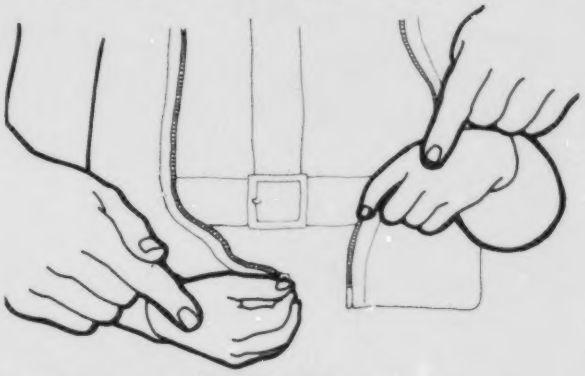
(Touch the hand that is to hold the side of the zipper.)



L: (Holds the side of the zipper when his hand is touched.)

I: Now, unzip the jacket all the way. Hold and pull *up* on this side of the zipper, while pulling *down* on the tab.

(Touch both the learner's hands.)



L: (Unzips his jacket when his hands are touched.)

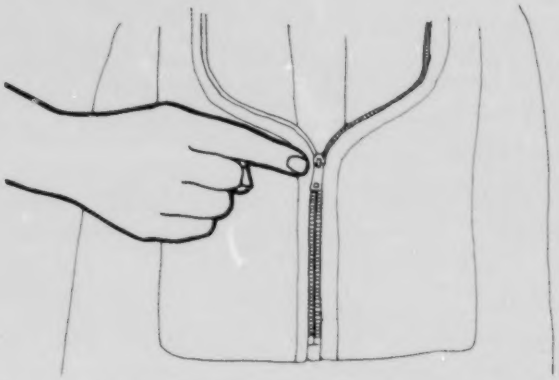
I: Great! You unzipped your jacket!

(Repeat Step C until the learner correctly completes each part of the step when you touch his hands. When he does, proceed to Step D.)

STEP D Tell-Point

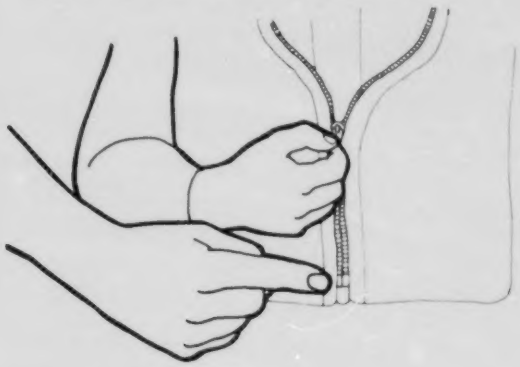
I: (Rezip the jacket.)

Let's practice unzipping your jacket again. Hold the tab.
(Point to the tab.)



L: (Holds the tab when the instructor points.)

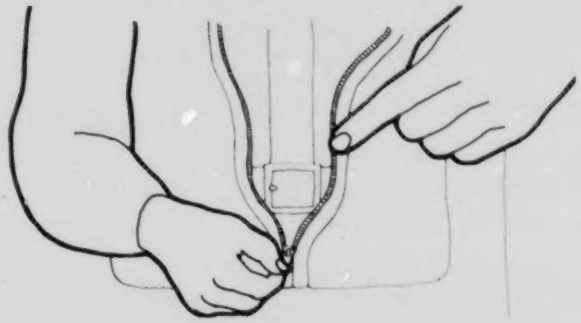
I: **Now, slide the tab to the bottom.**
(Point to the bottom of the zipper.)



L: (Pulls tab to bottom.)

I: **You did a nice job sliding the tab.**

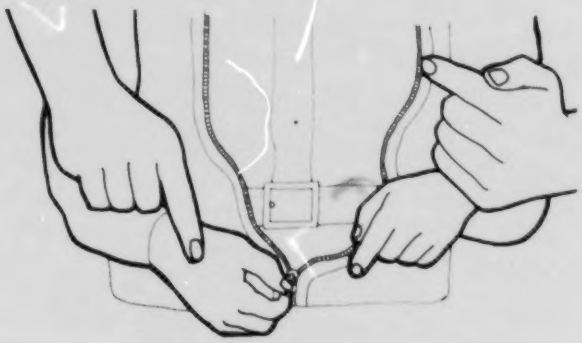
I: **Now hold the side of the zipper.**
(Point to the side of the zipper.)



L: (Holds side of zipper.)

I: **Good holding the side of the zipper! Now, let's unzip the jacket all the way. Ready, hold and pull *up* on this side of the zipper . . .**
(Point to the side of the zipper.)

. . . while pulling *down* on the tab.
(Point to the tab.)



L: (Unzips jacket.)

I: **You did it! You unzipped your jacket.**
(Repeat Step D until the learner correctly completes each part of the step as you point. When he does, proceed to Step E.)

STEP E Tell

I: (Rezip the jacket.)

Let's unzip your jacket again. Hold the tab.

L: (Holds the tab.)

I: Good holding the tab! Now slide it to the bottom.

L: (Slides it to the bottom.)

I: That's the way to slide the tab! Now, hold the side of the zipper.

L: (Holds the side of the zipper.)

I: Pull *up* on the side of the zipper while pulling *down* on the tab.

L: (Unzips the jacket.)

I: You did a nice job unzipping your jacket!
(Repeat Step E until the learner correctly completes each part of the step when told. When he does, proceed to Step F.)

STEP F

I: (Rezip the jacket.)

This time, unzip the jacket by yourself. Ready, do it.

L: (Holds the tab, slides it down, and holds the side of the zipper; then pulls *up* on the side and *down* on the tab.)

I: (Repeat Step F until the learner unzips the jacket three times in a row.)

NOTE: When the learner has unzipped his jacket by himself three times in a row, he has finished Lesson 1. Mark the Instructor's Chart and give the learner a reward badge.

Sensorimotor Cognitive Assessment and Curriculum for the Multihandicapped Child

NANCY M. FIEBER
University of Nebraska Medical Center

The purpose of this paper is to acquaint teachers of multihandicapped, deaf-blind, or severely/profoundly retarded students with assessment of very early cognitive behaviors and implications for curriculum. We will be concerned with the sensorimotor period of cognitive development, which is roughly equivalent to the first two years of life. Cognitive development is defined for this purpose as concepts, reasoning ability, and mental representation. This mental representation is prerequisite to symbolic thought and language development.

The assessment presented is that being utilized in the Infant Development and Deaf/Blind Programs at the Meyer Children's Rehabilitation Institute, Omaha, Nebraska, under the direction of Cordelia Robinson, Ph.D. It is derived from the work of Uzgiris and Hunt (1966; 1975) and Escalona (Note 1), based on the work of Piaget (1952; 1954), and adapted for our population by Dr. Robinson. This assessment is applicable regardless of age if the child is functioning at a sensorimotor level. Because the scales are ordinal, not normative milestones, they are designed in terms of the sequences in which concepts develop in several relatively independent cognitive areas. They are written as observable, measurable behaviors which demonstrate concept levels, and are useful as a measure of child progress, in program evaluation, and in development of prescriptive curriculum for an individual child.

The subscales included in the Sensorimotor Cognitive Assessment are: (1) Visual Pursuit, Localization and Object Permanence; (2) Development of Means for Obtaining Desired Environmental Events; (3) Development of Operational Causality; (4) Development of Motor Imitation; (5) Development of Vocal Imitation; (6) The Construction of Object Relations in Space; and (7) The Development of Schemes for Relating to Objects.

The criterion behaviors listed were derived for children with intact sensory and motor abilities and are quite visual in emphasis; therefore, methods of task presentation and response may need adapting for children with sensory or motor handicaps. The work of Else Hauessermann (1958) has been a valuable source of adapted testing strategies and philosophy. Strategies and curriculum substeps often need to be individually developed because of varied combinations of handicaps, and we are slowly developing and validating curriculum as we go along. We will describe some examples of task adaptations and of curriculum for some of the most severely handicapped children at the very beginning of cognitive development, which may be of immediate practical assistance to teachers.

Because motor handicaps are so visible, their effect on a child's total development may be more fully appreciated by a teacher, and motor management often plays a major role in the child's educational program. We will be concerned with the difficulties in sorting out mental and motor factors, and the importance of designing activities for both areas. The child will not always be able to respond optimally to instructional level cognitive tasks and instructional level motor tasks at the same time. Research with the development of attention in infants by Wolff (1973) supports this common sense approach.

The child's sensory handicaps probably have a greater impact on ability to learn, yet these are often undiagnosed or uncorrected. The impact of even a mild sensory deficit is greater in multihandicapped children because they do not have the compensatory abilities of the otherwise normal hearing impaired or visually impaired child. For example, the "normal" blind child must learn to make meaning of what he hears through associations with direct experiences. When a blind child is motor handicapped, experiences are also severely limited, and it is very difficult to make meaning of environment and language. Meaning will depend on correlating or associating information from two or more sensory channels. For this reason the development of any residual vision or hearing potentially available to a child is critical, and curriculum is developed for functional vision and hearing training as well as cognitive goals. Persistence in seeking adequate diagnosis and treatment for these problems is also needed.

Basic Schemes

With a severely/profoundly handicapped population we may need to begin with assessment and curriculum for the basic sensorimotor schemes which are normally present at birth: abilities for visual fixation and tracking, sucking, and grasp reflexes. As these behaviors come under voluntary control they are the beginnings of cognitive development. The normal newborn also shows the beginnings of pattern and form discrimination in his preferential looking at stimuli such as black and white checkerboards or facial configurations. Although less well organized, auditory stimuli elicit altering or listening responses. Severely handicapped children may lack these basic ways to deal with environment and the ways to compensate for deficits.

Visual schemes. In our population we have children whose abnormal motor patterns and seizure activity interact with central or peripheral visual system

problems to prevent the organization of the basic visual behaviors. These children may be unable to fixate or track and may be labelled cortically blind. Severe oculomotor system problems occur such as strong deviation of eyes in one direction, with associated abnormal tonic reflex activity of the whole body. Primitive compensatory eye movements in the opposite direction of head movement (Doll's Eyes Phenomenon), may be retained and exaggerated, causing eyes to deviate with every movement of an unsteady head.

Initial sensory organization goals may be directed toward developing ability to fixate, to track moving stimuli, or to turn toward objects moving in from the peripheral visual field. Probes will explore differential responses to varying stimuli such as lights, patterned configurations, color, and faces.

Positioning may be a critical factor in developing these basic abilities. Our experience has suggested that supine positioning, with some flexion of head and legs to break up strong extension, head centered and fixed, is frequently the optimal condition for initial visual training. A head centering cushion has been helpful in facilitating the freeing and centering of the eyes necessary for these children to begin to achieve a fixation. A slight tilt up, however, may provide more contact with the environment. Our experience with an institutional population has been that many children's deformities prevent positioning in chairs or beanbags, and supine positioning on a long wedge with high edge about one foot, and adequate head centering, may provide visual contact once some ability to fixate is achieved. In some instances side-lying will favor freeing eyes from lateral deviation, (right side-lying for right deviation of gaze and head turn), while on the child's other side the deviation of gaze may be increased, preventing any fixation at all. It is important for teachers and therapists to investigate and *measure* basic visual abilities in different postures and design interventions accordingly.

Visual responses may also be affected by the disorders of state and arousal which may occur as a consequence of central nervous system problems such as constant sleepiness, irritable crying and inability to soothe, or very labile fluctuations between states. A child may be easily overloaded by sensory input, responding pleasurably one second, and crying the next. We have a great deal to learn about the effects of varying stimuli on disorders of state and arousal with handicapped populations. For example, different types of vestibular stimulation can have varying effects. Bringing a child abruptly from supine to upright, or bouncing a little, has effected eye opening and alerting with several very lethargic children, similar to findings of Korner's research with neonates (Korner & Grobstein, 1966). Slow rhythmic rocking has enabled some very irritable and unsoothable infants to quiet and begin attending to outside stimuli. The visual organization of children with complex deviations of gaze and poor fixations may be adversely affected by vestibular stimulation such as rocking or spinning, as they already have an exaggerated vestibulo-ocular reflex (Fieber, Note 3). We feel it is important to carefully measure effects of any such stimulation on specific functional organization abilities such as fixation or on definable state changes (See Lewis, 1972; Wolff, 1966; and Moss & Robson, 1970, for a classification of states). Research with the differential effects of sensory stimuli on arousal level in infants may provide some implications for management of these problems (Birns, Blank, & Bridger, 1973; Brackbill, 1973).

Tables 1 and 2 illustrate the type of data we record in work with visual fixation or tracking. Baselines for visual fixation may determine (1) latency time to obtain a fixation in a given stimulus trial such as 15 sec., (2) duration of fixation, (3) responses to varied stimuli — light or shiny, black and white checkered or bulls-eye patterns, colors, faces, and sound-visual versus visual alone. An objective such as shortening latency time, and then increasing duration of fixation, can then be developed. With careful analysis of ongoing records, objectives and strategies can be revised. Changes in stimulous preference may demonstrate increasing discrimination.

Baselines for visual tracking may determine (1) arc, (2) eye movements alone (ocular pursuit) or more advanced eye-head movements (oculocephalic pursuit), (3) direction, and (4) stimulus effects. Information may show changes from movement of one eye only to binocular coordination.

Because expected outcomes may be unknown when training begins, long-term goals may need to be expressed as open-ended for maximal use of any potential vision. Initial short-term goals may need to be stated as exploratory probes. Any improvement in functional vision can be important for a multi-handicapped child, and goals in this area need to be ongoing and parallel to other curriculum. One individual, for example, has become able to fixate and shift his gaze after many months' work, but cannot track at all due to specific central vision system problems. Work with sensorimotor cognitive development proceeded, however, adapting task presentations, and he now is using eye-pointing to indicate named pictures in beginning communication board work.

Further information on assessment and curriculum for the children with complex sensory organization problems is described in Fieber and Robinson (Note 2) and Fieber (Note 3).

Grasp scheme. One of the most frustrating characteristics of some severely/profoundly handicapped children is lack of basic concepts of hands as tools with objects. The basic scheme of grasping is included as the beginning of the Schemes for Relating to Objects subscale: "Holds object 30 seconds." Grasp normally begins with automatic responses to stretch and touch, and during these automatic phases grasped objects are retained only very briefly. Voluntary grasp, or the "grasp scheme," normally appears as the reflex wanes, and the child retains grasp longer to maintain

TABLE 1

Visual Fixation: Record of Probes.

OBJECTIVE	ADMIN.	CRITERIA	FREQ.	TRIALS						DESCRIPTIVE COMMENTS
				Date	Stim.	Latency, Sec.	Duration 1st, Sec.	Freq. Fix. in Trial	$_{B}^{R}$, L, $_{B}^{R}$	
Visual fixation, 15 sec. trial, latency < 5 sec. duration 1st fixation 1-3 sec.+	In Bobby Mac seat, head centered with cut-out Present visual and sound-visual sti. at mid-line, focal distance 6-8".	Pupil reflections, eye(s) 5/5, 3 wk. in a row.	5X	9/19	V bear	1"	1"	several	L → B	
					VS bear	1"	1"	few	L	startled and lost
					V red Legg	< 1"	2"	several	L	Note: Alternate exotropia--though still favors left eye, may finally get both on stimulus, and beginning to alternate exotropia, rt. eye centering at times.
					VS red ball	2"	2"	few	L → B	
					V mirror	0	0			
					VS rattle	3"	1"	few	L	
				9/24	V lite brite	2"	6"	several	L	
					V checker	3"	3"	several	L → B	
					SV bear	5"	2"	several	L	startle
					V checker	5"	2"	several	L	
					SV bear	3"	7"	several	B	
	Sidelying on rt. side, legs flexed, relax head before presenting. Wait for eyes to free		5X	9/26	V mirror	1"	1"	one only	B	went into extension
					V checker	1"	25"		B	rt. centered more
					V checker	2"	30"		B alt.	fix. Rt. & Lt.
					V colored pattern	2"	1"	one only	B	startled
					V red Legg	1"	5"	several	B	sl. exotropia rt.

an interesting perception. Fisted hands begin to open and an open hand will encounter graspable things such as body parts, clothing, or crib environment. Children with tightly fisted hands, abnormal postures, and restricted movement may not encounter graspables in this way, and unless someone places things in their hands, may not develop a mental representation of grasp. Though they may have the idea and the intent, many severe athetoid children simply cannot maintain grasp due to conflicting withdrawal reactions. With other children there is no motor excuse; their hands are open, motor grasp occurs with grasping of hands or feet, but there is no grasp scheme for objects.

Early objectives for developing a grasp scheme for objects may be baselined and monitored by recording duration of grasp. If an object is placed in a tightly fisted hand, awareness or interest may be indicated by quieting, a tentative movement toward the mouth, visual or head orienting. A strategy that has been useful with several children has involved tying a small bell or rattle in the child's palm with large colorful yarn for 5 minutes so that the object would not be immediately lost. During that 5 minutes we might record changes in the cumulative time fingers grasped and regrasped the object, or other awareness behaviors. Following the 5 minutes the tie would be loosened, and 5 or 6 trials timed for duration of maintenance of grasp. At the beginning of tied and untied trials the teacher would squeeze the child's fingers around the object, guide it to mouth or to gaze, or shake it a little. Usually the tied trial could be eliminated as duration increased.

The next steps would involve coordination of grasp with other schemes such as mouthing, looking, or listening, and at this point tying might again be needed for a time as grasp might be difficult to maintain with arm movement. A fading of assistance might be appropriate here till grasp could be maintained with arm movement. Side-lying positioning would be explored to see if this facilitated this coordination. Maintaining grasp with arm movement is a motor ability; the intent to coordinate schemes, however, may be clear even though the child drops the object, and that intent reflects a cognitive scheme. Work with the basic grasp scheme is planned in conjunction with other objectives under the subscale "Means for Achieving Environmental Events" and will be further discussed.

TABLE 2

Visual Fixation and Sound Location Data Sheet

OBJECTIVE	CRITERION BEHAVIOR	DATE	RESPONSE	DATE	RESPONSE	DATE	RESPONSE	DATE	RESPONSE	DATE	RESPONSE
Vis. Fix.	4/5 trials 2 wk.	1-17	Lite - Brite 1. ? 14 B 2. ? 10 R 3. ? 7 B 4. ? 9 B 5. -	1-23	Lite - Brite 1. +5 R 1sec. 2. +5 B<1sec. 3. +4 B<1sec. 4. +6 R<1sec. 5. +5 B 1sec.	1-30	Goal: Latency 4 Duration1-3 1. +5 R<1sec. 2. +4 R 1 sec 3. +3 B 2sec. 4. +5 B 1sec. 5. +6 B<1sec.		Begin using probe sheet for careful analysis.		
Sound Loc.	4/5 R & L 2 weeks.	1-17	Rt. side 1. - rattle 2. - squeaker 3. +13 voice oc 4. +11 oc. voice 5. +14 oc - bell	1-23	Rt. side 1. - rattle 2. - rattle 3. + 10 oc. voice 4. +8 oc.bell 5. - music b.	1-23	Rt. side 1. +8 oc. voice 2. +6 oc. voice 3. - rattle 4. - rattle 5. +9 bell		Probe a more upright position ?Hearing		
			Lt. side 1. +4 oc. rattle 2. + 12 oc. squeak 3. +10 oc. voice 4.- 5. + 5 oc voice		Lt. side 1. +5 oc. voice. 2. - squeaker 3. +4 oc. bell 4. - 5. +5 bell		Lt. side 1. +5 oc bell 2. +4 oc voice 3. +4 oc voice 4. +6 oc rattle 5. +5 oc bell				
1-17-74	Increased frequency and prompt systematic movements.	1-17 Basal 5 min with 5 min	Bil. Bil.								

Sucking scheme. Evaluation and training of sucking abilities or problems will not be discussed in this paper except brief mention of work with suck in early operant learning (Bijou & Baer, 1965; Kalnins & Bruner, 1973), and in the development of use of the hand as a tool. Control of environmental events such as visual or auditory spectacles by sucking has not been utilized with severely handicapped infants as far as I know, and may be impractical due to problems with this basic scheme. The role of sucking in the development of grasp begins with some automatic relationships such as the palmo-mental reflex. Coordination of voluntary grasping and mouthing schemes play a prominent role in early hand use, but we do not know that this is essential for development of hand as a tool with handicapped children. We have seen a number of children who have developed hand use and object exploitation without coordination of hand and mouth schemes, and several now feed themselves. We need to explore relationships with other behaviors such as chewing or acceptance of textured foods, praxis oral abilities related to speech sounds, and many others. The mouth is such an important explorer for most sensory handicapped children that I am more comfortable with our other typical problem, the child who mouths too much!

Coordination of Basic Schemes

The initial items of the Sensorimotor Cognitive Assessment deal with coordination of basic schemes. Tracking 180° arcs involves coordinating head turn with eye following in order to maintain perceptual contact with an object (Visual Pursuit, Localization and Object Permanence subscales). The hand-watching behavior of the supine child involves moving the arm in order to obtain or continue perceptual contact with the hand (Means for Achieving Environmental Events and Operational Causality subscales). Sound localizing in the Construction of Object Relationships in Space subscale involves coordination of head turns with auditory processing and results in visual and auditory correlation under normal circumstances. In

the subscale for Schemes for Relating to Objects, coordination of grasp with mouthing and coordination of grasp with looking are critical early behaviors.

These coordinations of schemes may be very difficult for a motor-impaired child. Strong tonic reflex posturing or severe oculomotor problems may interfere with tracking in wide arcs or turning eyes and head to sounds. Due to exaggerated neck extension and abnormal quality of the asymmetric tonic neck reflex, the handicapped child's hand may never intersect with his gaze, whereas in the normal child this pattern allows or facilitates hand-watching. Even in side-lying positioning, neck extension and upward eye deviation combined with extended arms may prevent hand watching.

Children with visual handicaps may demonstrate the hand-watching behavior, but at such a close focal distance that this localization does not progress in the normal sequence to directing reach. The child who cannot focus on near objects, including hands, seems particularly diverted from normal hand use development, and the blind child does not have this critical coordination at all.

Severely/profoundly handicapped children may demonstrate a variety of unique and personal behaviors which are at the level of this early coordination of schemes. These reflect a beginning level of "Means-end" or causality behaviors; however, in these children they are maladaptive and do not lead to further development. Examples are self-stimulatory behaviors such as the head-rolling of a visually impaired child, hand flapping, or eye pushing. Such behaviors may fill a need for sensory input, especially self-regulated input, and careful analysis can tell us a great deal about functioning abilities and reinforcing stimuli.

General Suggestions for Administering the Sensorimotor Cognitive Assessment

Each of the subscales of the Sensorimotor Cognitive Assessment will be described separately with examples of curriculum at the lower levels. If it appears that the child manipulates objects at all, the Schemes for Relating to Objects subscale is a good starting point. When a child is interested in an object, problems can be presented across the other subscales. Intrinsic motivation is a critical factor in performance. When a child does not perform a task it is suggested that the object be given again to the child to be sure he is still interested in it, and on occasion one may probe with an edible such as a cookie.

To credit the child with a certain level of performance on any of the scales, three examples with different materials or situations should be successful. If the child has learned to perform the task only with specific materials, this may represent a "skill" but not the desired generalization which suggests a concept. Testing is continued in each of the subscales until two successive task levels are failed. When the child is failing a task, prompts or additional information can be given which will sustain interest and provide assistance in developing substeps.

It has been our experience that natural reinforcement of object and task interest are very important; thus, when the child searches for an object the logical reinforcer is to play with the object, and the examiner should not move too quickly to the next trial. Occasionally the examiner will need to use an edible reinforcer in addition to natural and social reinforcers, to enable some children to demonstrate their best abilities. Reinforcement should often be given for task effort, not an arbitrary task level, as there is no really wrong response. Children will show unevenness and respond at one level with one object or condition, and at another level with a different object. The child with limited abilities can usually be assessed in one session; others may require two or three sessions.

I. Visual Pursuit, Localization, and the Permanence of Objects.

This scale involves the development of the ability to represent objects and their location mentally: being able to think about them when they are not in the child's immediate perception. Recognition that the object still exists is demonstrated by search for the object. This representational ability is considered to be prerequisite to development of symbolic thought and language.

A. Advanced Visual Pursuit and Localization. Prerequisite behaviors for object permanence.

1. Follows a slowly moving object through a complete arc of 180°.
2. Child maintains gaze at point where object he was tracking has disappeared.
3. Child reaches for and picks up (may or may not touch cover) an object which was partially covered as he observed.
4. Child follows an object suspended from a string through a complete arc around his head, and turns to side opposite its disappearance in anticipation of its re-emergence.
5. Child leans or moves in seat to look after an object which was dropped so that it falls out of the child's view. (The object should make very little sound.)

B. Object Permanence.

1. Single visible displacement with one screen. Object is covered completely. Child removes the screen and takes the object. Do not credit if the child merely removes the screen and plays with it.
2. Visible displacement, random alternation between two screens. The child removes the correct screen and obtains the object.
3. Sequential visible displacement with two screens. The visible object is moved slowly, first under one screen and then placed under the last screen.
4. Invisible displacement with one screen. The object is placed in the examiner's hand, can, or box top,

and then released under the screen. The hand or box remains closed. The child may check the last place he saw the object first, but is credited if he continues search under the screen.

5. Invisible displacement with two screens. Searches directly under the correct screen.
6. Sequential invisible displacement with two screens. Child searches under the screens, in order first to last, or directly under the last.
7. Sequential invisible displacement with three screens. Child searches under the screens, in order first to last, or directly last.
8. Representation of sequential invisible displacements. The object is hidden first in the hand, can, or box, which is moved sequentially under the three screens; however, the object is released under the first screen. When the child does not find the object in searching under the last screen, he systematically checks back in reverse order. (This item is not administered unless the child has progressed to search directly under the last screen in No. 7.)

When the child is motor handicapped he may respond with reach or point if possible, and the examiner can assist by lifting the cover. With those children who are unable to give a clear indication through pointing, an eye-point may be a more reliable response. This activity and strategy can be preparation for use of this indicator response with later language activities such as indicating named objects or pictures, or indicating wants presented as choices.

The child's ability to maintain eye contact with the sequence of events is critical, and a child with an unsteady head or oculomotor control problems will have difficulties attending, and will be apt to make errors on the basis of lost contact of directional eye movement problems. The child's chair adaptations need to provide conditions which provide for head stability and centering without any tilt backward of head on body. Because many children's oculomotor control will be more efficient in a centered forward gaze, rather than down gaze, raising the height of the task presentation will be helpful. This will also eliminate the dropping forward of the head that may occur with effort to look down at the tray, and the child will maintain better head control. Whenever the child's head drops forward in effort to look down at the tray, he not only may lose eye contact, but his eyes may roll up both as a counter-rotation upward with the head drop, and in an exaggerated roll up with head movement as the child lifts head again. When such a child is ready to scan pictures, or other objects, a tilted-up rack is needed.

Close cooperation of therapist and teacher is needed in design of adaptive chairs and other equipment. The external support conditions needed for attention and thinking will need to be more supporting than one might otherwise prescribe in a chair. For the sake of increasing motor control one would like to allow the child some active control and challenge to right his own head if this is possible; complete support all the time could inhibit motor progress. Obviously both conditions are important, and need to be provided for in the plan for the day.

A blind child obviously does not follow exactly the same steps as the sighted child. Early mental representation and anticipation will occur in other sensory modalities. Fraiberg (1975, Note 4) has studied the development of blind infants and suggested that beginning object permanence is inferred by directed reach to sound cue. We find that steps such as reach with sound cue discontinued and orientation moving into space on sound cue are useful progressions. The blind child will sometimes begin to manage at least the simpler displacement or hiding problems with use of sound cues in placement, but this probably represents a considerably higher level. Fraiberg feels that the blind child does not complete development of object permanence until mobility and free movement around home is established.

31. Means for Obtaining Desired Environmental Events (Means-ends).

In this subscale we look at the child's use of one behavior pattern or scheme as a means to effect another end or goal. We see the child beginning to attempt to maintain or regain interesting environmental events and development of the hand as a tool in the early stages, and objects as tools in the later stages. Increasing intentionality or foresight are the essence of this subscale, with the increasing differentiation of means and ends. This subscale with the Causality subscale, we believe, is closely related to the early development of communication (using signals to indicate wants and to foresee their effect). The upper stages of this scale have been found to correlate highly with the emergence of one-word phrases (Snyder, Note 6).

1. Hand-watching. Coordination of two schemes, moving arms to visually explore hand. Generally observed in supine position in infants.
2. Child repeats an early motor movement (batting, kicking, head motion, etc.) which activates a visual or auditory spectacle.
3. Child reaches and grasps toy when both hand and toy are in view.
4. Child reaches and grasps toy with just toy in view.
5. Child pulls a support (pillow, cloth, boxtop, etc.) to obtain toy which is just out of reach. (With or without demonstration. Record demonstration as prompt.)
6. Child uses some form of locomotion or movement between postures to obtain a toy out of reach.
7. When a toy is held above a support the child does not pull the support as previously, but realizes he must reach or signal for the object (this item is not administered unless the child passes No. 5 above).
8. Child pulls string to obtain object on a horizontal surface (with or without demonstration).

9. Child uses string tied to object to obtain it while it is not in the direct line of sight, usually pulling the string vertically (with or without demonstration).
10. Child uses an object within reach (stick, small rake, large spoon, etc.) to obtain the object which is out of reach.
11. In the problem of putting a long necklace or string of beads into a tippy container such as a paper cup or tall narrow container, the child foresees likely fall of the container and adapts a successful approach from the start. Foresighted behavior might be bunching beads in hand, stabilizing cup with the other hand, lowering the beads carefully by string, or any other method.
12. Child does not attempt to stack a solid ring which is mixed in with other rings for post. This implies mental representation of the end and the means, and foresight rather than the hindsight after an unsuccessful attempt to put it on the post.

Development of Reach as a Means to Grasp

Problems in the development of simple reach and grasp will involve cognitive factors, motor factors, and sensory factors (especially vision and hearing). The early hand-watching behavior and the grasp scheme are both important precursors. The very early sequence of events leading finally to reach as a means to grasp has been described by White and coworkers (White, Castle, & Held, 1964; White, Held, & Castle, 1967; White, 1969) and by Bruner (1969).

The beginnings of reach and grasp seem to be separate mental events, which are finally coordinated. Experience with assessing and training a number of children who did not use their hands suggests that because discrepancies may exist between the two schemes it is appropriate to design parallel curriculum sequences which finally merge, rather than arbitrarily sequencing grasp and reach events together.

In the normal course of events the child's interest in visual stimuli, increasing accommodative ability for different focal distances, hand-watching, and seeing hand by stimulus, lead to an approach movement to the visual stimulus, without any intent to act on the object.

This type of experience and the discovery that arm and leg movements may cause something hanging in the crib to move or sound, may vary in sequence according to the child's visual abilities and environmental circumstances. See the work of Watson and Ramey (1972) and Watson (Note 8) for research with normal infants.

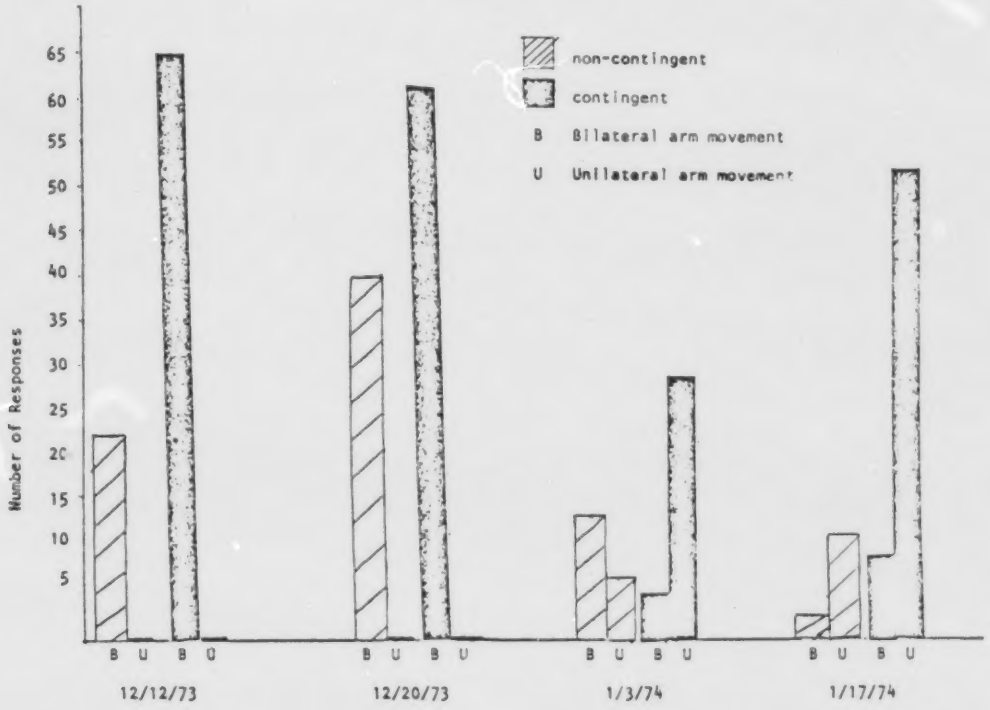
Repeated encounters may lead to a mental association between hand and object, and the anticipation that develops evolves toward the reach that can be used for batting or later for grasping. In motor development we often see a similar sequence: experience in a new posture prepares the child finally with new righting abilities for independently assuming the posture. In the development of hand use, seeing or hearing, or touching one's hand with the stimulus prepares the child for intentionally placing the hand by the stimulus.

Use of limb movements which produce an interesting auditory or visual event begins with an accidental encounter. With repeated accidental encounters the child begins to realize that his movements will maintain this interesting event. He may test this great discovery by pausing and looking, then show a flurry of action again as if to confirm his discovery. Eventually the child will show intention or foresight to initiate the movement when the object is seen, or sounded, or perhaps touched to his hand and withdrawn a little. We will record which cue seems to elicit the intentional movement. Often we see progress from touch withdrawal, to sound or "ear-hand", and finally t visual cue if functional vision improves with the visi ally impaired child.

Any body movement may be utilized that is already in the child's repetoire, however, it is arm movement, evolving from a fisted batting or swiping to open-handed batting, that leads to reach and grasp. It is not unusual to see hands that have been fisted in flexor spasm begin to open, though extension in protective extension or propping are not yet present. In the course of discovery of himself as an actor on the environment, a causer of interesting events, one will see intention generalized to other dangling "batters." A progression from the use of all limbs or both arms, to use of the limb producing the event also will occur, though slowly, with the cerebral-palsied child (Figure 1).

With the initial objective "Child systematically repeats movement which produces an auditory/visual event," the first step is to observe the child's spontaneous movements to determine the most probable movement, and to define it in terms of part of limb, direction, and arc so that it can be counted. The second step is to record a baseline of 3 or 5 minutes of number of movements. The third step is to place an easily activated auditory/visual spectacle maker such as brass or "fish-scale" wind-chimes, in contact with the limb so that the slightest movement activates it. We avoid tinkling the chimes except as a little prompt, when the child is not moving, aiming at guaranteeing a tinkle even for minimal movements. A yarn tie with slight tension may help harness slight movements and may increase awareness of the limb. We often need to experiment with placement of the chimes till we get an optimal condition. We record the number of movements in 3 or 5 minutes, not just the successful ones in tinkling the chimes, as we want a consistency with our baseline method. In early training it may be helpful to record baselines and contingent movements for each session, as changes are slow for some children, and others' performance will be variable from day to day due to seizures or other problems. A less frequent sample may not catch the child on his good days.

Figure 1. Responses during non-contingent and contingent means-end activity sessions for C.A.M.



One may need to experiment with different positioning arrangements. Experience has suggested that the child who does not use his/her hands will often move his/her limbs more easily, and deal with the visual and auditory spatial locations more successfully, in the supine posture. This is where normal infants develop the basic concepts and motor patterns for hand use. Some control of abnormal extensor tone, which is often exaggerated in supine, is helpful: a pillow to flex head, and perhaps flexion of legs over a support or one's lap. The child's head should be allowed to turn a little toward the event, and arms left in the horizontal plane to start (also where they are in the normal infant at this point). Stimulus presentation should be clearly lateral with the arms forward, and midline coordination, if possible, coming later. Sidelying may be utilized also, if it is optimal as far as the number of movements (counting and recording will determine usefulness). At this time these positioning interventions are suggested only for those children who are not using their hands, and have been tested through successful experience with this group. Without more data, I am not prepared to generalize these methods to the cerebral palsied child who obviously tries to use his/her hands.

As a therapist I used to feel concern about the child's "use of abnormal patterns" and was concerned that an increase of tonic reflex activity might result from these activities in supine. Experience has caused me to revise these premises and to be more concerned about the effects of never acting on environment, both on the child's cognitive development and motor development. As one sees the child develop intentionality, one sees the child break through his abnormal postural patterns, and with the development of reach and grasp, one can then work toward the more symmetrical movements. Of course the child should not be left too long in an asymmetric supine, or any posture, as that can contribute to deformities. We should be concerned with providing a variety of postures, with different advantages and disadvantages for each. "Good positioning" may also be deformity producing, and crippling for early sensory organization and cognitive development if the child cannot organize attention, sensory functions, and act effectively in that position.

As we see a systematic increase of movement, and the development of more intention, goals can be set toward shaping movement more toward a truer extensor swat to the side. It is a good rule to practice with each arm, just as with grasp, and to stay with one arm and hand in a session at first. It is not unusual to have one hand be best at grasp, the opposite arm best at directed reach and batting, often related to the child's tonic neck reflex pattern. In time the child will get it all together, more typically with the best batter.

Once the teacher has determined a workable combination, environmental arrangements can be utilized for some periods when direct attention must be given another child. It is important not to leave such an arrangement too long, however, as the child may become satiated and be unable to get away from the stimulus. It is also important to work for generalization and

accommodation across other dangling objects or with "tippy tinkle toys" such as a "Happy Apple" before considering this level proficient.

Hopefully the child has also been establishing "grasp scheme" and has progressed to coordination of the grasp with mouthing, looking, or listening. Strategies for developing these further coordinations cannot be described in detail in this paper. A significant step then occurs in which the child sees or hears the object, bats at it intentionally, and then when contacting it seems to think of grasping, as if an afterthought. With severely/profoundly handicapped children who are developing mental representation so slowly, this appears to be a major stage occurring before the child reaches with his hand shaped in readiness with intent to grasp. With these children I have not really seen the slow approach with alternate glancing between hand and object which has been described in normal infants as Piagetian reach. With time the child will need to retrace some of these steps in sitting with objects on a tray, and in other positions.

Obviously the steps for a visually impaired child will be different and will depend more on sound localization. This includes the children whose hand-gazing is very close, and the hyperopic (farsighted) children who have no visual contact with hands or near objects. The development of direct reach to sound cue is delayed several months in the blind infant, depending on development of sound localizing in several directional gradients, and on beginning concepts of object permanence. These sequences have been described in detail by Fraiberg (Note 4), see Table 3. The work on grasp scheme, coordination of grasp scheme with mouthing or listening schemes, and systematic repetition of movements causing an auditory spectacle will prepare for eventual reach to sound.

TABLE 3

Sequence of Development of Directed Reach in Blind Infants According to Fraiberg

23-28 wks.

Hand pantomimes action briefly when grasped object is withdrawn.
Object sounded, without previous manipulation, no response.
Object touched to fingers, hand explores and grasps.
Object sounded, after previous manipulation, no response.
Does not yet search tactilely where lost object.

At this stage sound doesn't confer substantiality to object, though infant discriminates mother's voice. Hearing and holding are separate events.

27-36 wks.

Object touched to hand, beginning search.
Beginning random search in place expects object to be.
Accidental contact results in grasp, then shakes, etc.
Object sounded, after previous manipulation, hand seems to activate in grasp movement, but no search, however head seems to orient to sound occasionally.
Repeats guided familiar banging object, kinesthetic memory.
Patty-cakes on verbal cue.
Stereognosis—recognizes cup manually and takes to mouth.

Interprets as sound not eliciting tactile-motor memory of object, but associates feel of object with shaking.

37-48 wks.

Object sounded, after previous manipulation, occasionally able to reach to it.
Reaches where last had contact with object.
Object sounded, without previous manipulation, see grasp motion but no search.
Protests removal of object.
Examines tactually and reorients. Discriminates and shows preference.
When toy withdrawn, hand follows.

Attributes beginning of reach to sound as convergence of recognition of sound of familiar toy and tactile-motor memory. Search coincides with examining scheme and object has qualities of its own.

49 wks.

Reaches to sound cue alone.
Begins to move into space to sound and develops space map.

Objects out of reach. In our experience the order of the items for strategies for obtaining objects out of reach (pulling a support, horizontal string, or locomotion) is somewhat variable depending on the motor abilities and experiences of the child. When great motor effort is involved in moving to an object out of reach, well established intentionality or ability to hold a thought through intervening events is needed. I have just seen a child whose cognitive development is delayed even more than his motor development, who is just becoming able to turn from sitting, to all-fours, to creep. He seemed to demonstrate intent to obtain an object out of reach, but by the time he had completed his rotation maneuver he had forgotten his goal. He had also momentarily lost sight of it in turning, and perhaps it no longer existed for him. One strategy might be to sound the object to attempt to hold his attention and intention. One might also design a shaping procedure, gradually requiring more of the motor sequence before giving the toy to the child. When the child's intention is strong it is an advantage in gross motor training, and should not be squelched by failure to provide for appropriate reinforcement.

Some children will need to learn that each new ability to change posture or locomote can be a means to obtain things out of reach. The teacher will need to observe carefully and try to decide if a child is moving for the fun of it and happening upon toys, or localizing and moving intentionally to the toy. For the blind child this will again be a sound localization problem and movement into space will come slowly (Fraiberg, Note 4; Fieber & Robinson, Note 2).

III. Development of Operational Causality

A child begins to understand causal principles when he begins to anticipate events. Through repeated sequential events he begins to think ahead. Causality behaviors are merged with "means-ends" behaviors in the early stages of acting to produce interesting sights or sounds. Then the child begins to generalize his repetitive actions to other circumstances where he really isn't the causal agent. He feels at first that he is the source or cause of events, but later begins to realize causality exists outside himself and attempts to

act on the source of the interesting event. He increasingly communicates with adults who can make things work for him, and finally learns through imitation to identify and activate the agent which makes mechanical toys work.

1. Hand-watching behavior. Momentary control over a source of input is made possible by coordination of two schemes.
2. Child repeats motor movement (batting, kicking, head motion, etc.) which activates a visual or auditory spectacle.
3. Examiner performs a spectacle such as swinging a toy (winding up music box, etc.) and when it is paused the child uses a "procedure" to elicit the event again. This may be a batting motion, kicking, or vocalization, something he has previously used to activate things himself.
4. Child touches the object or examiner's hand when the examiner has demonstrated an activity with an interesting wind-up toy and then stopped it. The examiner's hand should be available in reach.
5. Child makes a mechanical toy perform its action manually. Examples are pushing the wind-up car, directly moving the arms and legs of the clown activated by pulling a ring-string, or turning the wheel of the wind-up musical ferris wheel.
6. Child hands toy back to examiner to activate it again. At this level the child is more clearly requesting the action. Some children may guide the examiner's hand to the toy.
7. Child lets the activity of a wind-up toy continue without intervention. This item should be credited only if the child has demonstrated the stage of directly activating the toy.
8. Child attempts to activate the mechanical toy himself after demonstration.
9. Child attempts to activate the mechanical toy himself directly. Note: Success at final level implies completion of lower levels. Present a variety of mechanical toys, activating them first without the child seeing you wind, then with demonstration.

Procedures: Beginnings of communication. When an interesting spectacle or event caused by the examiner is paused, the child must be able to represent this event mentally at least briefly, and to anticipate that his procedure may reinstitute it. When the child has not been demonstrating the signs of beginning mental representation and anticipation in the visual channel, other sensory modes should be explored. For example, one little girl I work with has visual tracking and directed reach, but does not show mental representation of visual events such as maintaining her gaze at the point of disappearance. She does not signal for more of a visual event. She seems to remember an auditory event such as a wind-up music box, as indicated by a continuing expression of attending and smiling. She will hit at the music box when it stops, a "procedure" generalized from her scheme for hitting at chimes and "tippy tinkle toys." She also enjoys being swung in a blanket, and when this is paused shows similar attending and expectation, then either hits or kicks. She also enjoys a little game we have of tickling and making funny lip sounds that she makes, and when we pause will use this sound as a "procedure" for more of the game. Because these children have been reinforced for vocalizing they will often use vocalizations as "procedures." It is important not to be arbitrary at this point about either the eliciting situations or the "procedure" the child chooses. At this level he/she may use different ones for different situations. Observation for any little action on the part of the child can be shaped toward a more systematic signal if one sees the signs of the child continuing to think about the event when it is paused.

Fussing is all too often used as a "procedure" by handicapped children, perhaps because they have not had other successful experiences making things happen. Fussing has resulted in mother's attention, the winding-up of the mechanical swing or the mobile. For such a child one will need to work at the earlier level, helping the child to develop other ways of acting directly on environment.

Mechanical toys. A child with a severe motor handicap can learn to signal to others and to indicate understanding that a winder or lever is the causative agent for a toy by touching it or looking pointedly at it. It is desirable, however, for the child to have some success directly activating things himself with minimal assistance. Toys which some motor handicapped children may be able to activate are: keyboard toys such as "Whistling Songbirds," "Bigmouth Singers," and "Melody Mike;" the "Pound-a-Round;" the "Surprise Box;" "Tomy Choo-choo;" and pull-string talking toys with a larger ring attached.

IV. Construction of Object Relations in Space.

This subscale includes several categories of spatial concept. We see the child beginning to recognize objects differ in position in space, and to relate them. He begins to understand the spatial orientation of an object for function. He can reconstruct trajectories of rapidly moving objects and infers their spatial location, and begins to understand space coordinates related to his body surface. He experiments with the effects of gravity, and expands his construction of space outside his immediate reach as he moves out into space and deals with obstacles. Because of the different categories of spatial concepts involved, the insertion of items for which the sequence is unclear, and the variable experiences of multihandicapped children, we find more inconsistencies in the ordinality of this scale with this population and suggest more thorough probing rather than stopping testing after two failures.

1. Alternate glancing rapidly between two visual targets (substep is slow alternate glancing).
2. Child turns eyes and head and focuses on a sound

source presented laterally and outside his visual field.

3. Grasps object directly when within reach.
4. Reconstructs trajectory of falling object and directs eyes to place where it must have come to rest.
5. Searches for a dropped object when the end of the trajectory is out of view.
6. Searches in direction of trajectory of object slowly moved behind him.
7. Child indicates recognition of reversal or different sides of an object by turning it to its "right" side.
8. Searches behind him for object moved rapidly behind him.
9. Child brings two functionally related objects together producing physical contact at least three times (xylophone and stick, spoon and cup, drum and stick, etc.).
10. Child uses one object as a container for another. Several levels of container concepts may be demonstrated when the examiner places several objects in container, removes them both singly and "en masse" by dumping. Examiner notes whether child seriates several objects in and out one by one, or whether child imitatively reverses and dumps container.
11. Child builds tower of two or three blocks.
12. Child places toy on inclined plane and permits it to roll down the incline following demonstration.
13. Child moves entire body around a barrier and retrieves a visible object. The object should be moved so that the shortest distance to retrieving it is on the opposite side of the direction it moved.
14. Child moves around barrier to obtain object moved from visual field.
15. Child places one nested cup inside another (series of 4 round cups) without demonstration.

The final item of the Uzgiris-Hunt scale was not included in the current subscale in use in our program because of the frequent lack of mobility of our population. Child indicates knowledge of usual whereabouts of familiar persons and recognizes their current absence. Representation of familiar space is implied by memory of usual locations of objects or persons in it. The child can be moved and helped to learn about familiar spaces at home and school, and assisted to search for and find things. Understanding can be indicated by eye or hand pointing and gestures where possible. The blind child, if given the opportunity, will develop an internal space map of his familiar environment. The teacher can begin guidance of tracking of room peripheries and landmarks as soon as the child has some locomotion.

These spatial items are often found in developmental checklists used by educational programs under fine motor abilities. Here we are probing the child's understanding, not his fine motor abilities, and will assist him motorically as necessary. For example, in the block stacking item the child may indicate understanding of vertical spatial relationships by trying to place one on another, but be unable to control release. He may show beginning seriation as he sequences more without prompting. Although fine motor objectives such as accurate controlled release might also be included in a child's goals, his concepts do not need to wait for progress in motor proficiency that may never come. In assisting the child to participate one satisfies his urge "to do," and it is not difficult to tell the intent of the child's movements. Some interpreters of Piaget feel that sensorimotor cognition develops only through doing. We would modify this to learning through experience that is not necessarily motor.

Alternate glancing. The ability to shift gaze between objects develops from two months on in the normal infant, beginning with horizontal shifts, and by four months also between far and near as vergent eye movements and accommodation mature. These abilities involve both development of higher central visual system functions and ability to regulate or shift one's attention. Some children we see remain at earlier levels of attention or diffuse distractibility, or at the next stage where the child is caught by stimuli and often seems to be "stuck" in his attention. See Bruner (1969) for a discussion of the sequential organization of perceptual attention.

Work with shifting attention might initially involve presenting two interesting visual stimuli and using sound or movement cues initially to assist shift of gaze. In play with the child one can present two toys on the table, and encourage the child to look at both, then to play with them alternately. When the child begins to hold two objects we may see further awareness of "two" as he alternately looks, shakes, or begins to combine them.

Sound localization. The first localizing eye-turns to sound out of sight occur laterally at a close distance shortly after two months, and coordinated eyes with head turns occur by four months. Sound localization appears to develop in a predictable directional gradient. Not until 9 or 10 months does the child look directly to a lateral and downward sound source, and localization of sound out of reach is only beginning at that point. With the sensory and oculomotor problems typical of many of multihandicapped children they may never identify what is making a sound. This directional development is probably related to the development of directed reach in the blind child, or "ear-hand coordination." Reportedly many blind children do not turn to sounds but keep their faces frontally oriented. In our experience the turning response is often trainable in visually impaired children, and although there may not be visual identification, the eye-head movement seems to facilitate the development of "ear-hand coordination" and orientation in moving out into space. A blind child with hearing only on one side has special difficulties, but will develop some spatial localization at least within reach through systematic training of

sound paired to touch cues to different parts of his body once he has the beginnings of "ear-hand."

In assessing and working with sound localization we first position the child with his/her head centered to reduce any tonic deviations of gaze, and start with the eyes in mid-position. It is necessary that movement of the object or your arm doesn't stimulate peripheral vision. The examiner can extend both arms as he/she faces the child to avoid cueing the child if help is not available. We present a variety of sounds of varying frequencies and loudness, including voices, and keep track of what was used. Often combined frequencies, especially voice, are more interesting than purer tones. Positioning in some flexion may reduce some startles, but noisemakers are avoided which seem to elicit them. We record if the child seems to respond or not respond selectively to certain noisemakers, or any tendency to asymmetry. At first one may want to record the latency, or how long it takes to elicit a response within a 15 or 20 seconds trial, and note improved speed of processing. We also note whether an eye-turn or eye-head turn was obtained. Because so many of the multihandicapped children we see have possible central auditory system problems, poor responses do not necessarily mean receptive problems: organization may improve. An audiological evaluation is indicated if responses do not change.

Teaching to the point of success is suggested when the child does not respond; teasing the stimulus in and out of the peripheral vision, guiding a head turn, or touching the side of his/her head to cue him/her are some of the techniques used. Touch cues to body parts can help the severely visually impaired child progress in other directions. The natural reinforcer for localization is seeing or being helped to manipulate the source. If the child cannot fix at the periphery we move the object to a centered position.

Development of Imitation

V. Vocal Imitation.

The beginnings of vocal imitation are heard in a child's spontaneous vocal play, and as the child hears these sounds and speech around him/her repeatedly, they become recognizable as familiar. The first imitation of sounds must be based on sounds in the child's vocal play repetoire. Vocal imitative responses are best assessed during play or administration of other activities, taking advantage of communication and sharing with the child and spontaneous vocal play.

1. Spontaneous vocalizations occur other than distress sounds, implying some differentiation of the vocalizing scheme.
2. Child shows recognition of "own" sounds made by examiner by surprised facial expression (smile, etc.).
3. Child repeats "own" sounds initiated by examiner (coo, ah, gah, etc.).
4. When examiner initiates child's familiar babbling sounds (baba, mama, dada, nana, etc.) the child responds with vocalizations, but not the same sound.
5. Child repeats familiar babbling sounds initiated by the examiner.
6. When the examiner vocalizes novel sounds, not in child's repetoire, the child vocalizes similar sounds by gradual approximations.
7. Child repeats the novel sounds directly.
8. Child repeats simple new words.

In our population a substep before item 3 has been a major step. This involves the child initiating the sound in vocal play, examiner imitating the child's sounds, and the child showing awareness and reciprocally repeating the sound. Many of our youngsters will repeat at this lower level before imitating an adult initiated sound.

Because articulation problems due to dysarthria or apraxia may prevent a child from making certain sounds, evaluation by a speech pathologist is indicated if the child's sensorimotor level is nearing symbolic readiness but sounds are very limited. Alternative methods of communication may need to be considered. It is important not to emphasize vocal imitation at the expense of developing language meaning and reception through appropriate language input in meaningful activities. Language input may need to be in another mode, such as natural gesture, manual sign, or "touch communication" as utilized by teachers of deaf-blind children (Collins, 1974). With lower functioning children pre-linguistic forms of signals and referent behaviors which develop during the sensorimotor period should be established as working communication (Robbins & Stenquist, Note 5).

VI. Motor (Gestural) Imitation.

Motor imitation development follows a similar sequence progressing from familiar movements to unfamiliar. This scale is particularly relevant if manual communication is being considered, and will effect the learning of many other skills. This scale is often considerably delayed compared to other scales with deaf-blind and other low functioning children, and may imply some special problems with visualization.

1. Child demonstrates recognition of a familiar movement performed by examiner, and may make some movement in response, but does not imitate the scheme.
2. Child imitates the familiar movement demonstrated by the examiner.

3-5. Child imitates a familiar scheme in a new way or with new objects, i.e. hitting two blocks together, hitting keyboard toy instead of familiar Happy Apple.

Level 3. Unsuccessful attempt at imitation.

Level 4. Imitates the action by gradual approximation.

Level 5. Imitates the action directly.

6-7. When the examiner demonstrates unfamiliar

motor schemes or gestures to the child (verify unfamiliarity by asking parent) i.e. raising arms up high, scratching surface ("roll it" in pattycake, etc.) These should be motions child can see himself perform.

Level 6. Child imitates several gestures by gradual approximation.

Level 7. Child imitates several gestures directly.

8-9. Demonstrate unfamiliar motor schemes which the child cannot see himself perform i.e. opening and closing eyes, tongue movements to corners of mouth (wrinkle brow, etc.).

Level 8. Imitates gesture by gradual approximation.

Level 9. Imitates gesture directly.

Before the child may imitate familiar movements demonstrated by the examiner, he/she may repeat when he/she has initiated the movement and the examiner imitates the child. Common familiar movements are hitting or knocking on a table or tray surface (banging, shaking, etc.). The early levels of motor imitation are more easily elicited around such familiar object schemes, which can be determined by administering the Object Scheme Assessment. It is not unusual to obtain responses at one level with one scheme, and at another level with another scheme. When a child does not imitate demonstrated movements we may check to see if he/she will repeat a guided movement, which is appropriate also for visually impaired children. Sometimes a child will first repeat a guided movement, then come to recognize and imitate it visually. The "co-active movements" derived from Van Dijk's work and utilized by teachers of deaf-blind children, follow a similar sequence (Fieber, 1975, Van Dijk, Note 7). Because so many of these children are deficient in object schemes, the gross motor postures and locomotor patterns within a child's capabilities are often used in "co-active movement" sequences.

Some of the profoundly retarded children who occupy themselves with self-stimulation such as intricate finger movements, have shown interesting responses when the examiner imitated their movements. Affective responses such as laughing or anger, and beginning contact have occurred. A strategy utilized by Robbins and Stenquist (Note 5) is to share an activity such as rocking with the child to music, emphasizing "stop and go" with the music. Forward-backward rocking might then be modified to accommodate to a new situation such as teacher and child sitting astride a large roll and rocking side-to-side. Imitation work is very much a social communication and it is strengthened by a relationship with the child and the sharing of pleasurable experiences. When one touches base with the child's reality and shares it, the imitation play leads to the beginnings of communication.

VII. **Development of Schemes for Relating to Objects.**

The child's spontaneous play with objects reveals the development of the meaning of objects. The cognitive structures or meaning as shown by the child's actions with objects are called schemes. An object scheme assessment is included in the Sensorimotor Assessment. The schemes are divided into three classes: simple, complex, and social which are roughly ordinal in sequence (Uzgiris, 1967). The following sequence of criterion behaviors has been described by Uzgiris and Hunt (1975):

1. Incidental use of object in the exercise of a scheme (mouthing).
2. Momentary attention to the object involved in the exercise of a scheme (visual inspection).
3. Systematic use of objects in the exercise of schemes (Hitting schemes).
4. Beginning differentiation of schemes as a result of interaction with different objects (shaking).
5. Shift of attention from the exercise of schemes to investigation of properties of objects (examining).
6. Selective application of schemes dependent on the properties of objects (differentiated complex schemes).
7. Acquisition of new schemes as a result of studying various properties of objects (dropping and throwing).
8. Representation of functional use of objects (beginning appreciation of social use, holds cup as if to drink, etc.).
9. Reference to objects in shared interaction (pointing, showing, sharing).
10. Verbal expression of recognition (naming or related word).

In assessing schemes the child is given a collection of objects such as those listed across the top of the scheme assessment form. Spontaneous behaviors with an object are recorded for an arbitrary amount of time such as two minutes. Each scheme demonstrated with the object is checked, and it is interesting to note the first and second schemes tried. The child is considered to have a certain scheme if it is observed with at least two different objects. Analysis according to the scale of criterion behaviors is then done.

The child who is mainly in the stage of simple object schemes does the same things with all objects, incorporating them into his actions. Meaning is in visual, auditory, or oral tactile sensations, so the child's sensory handicap will affect those sensations which are meaningful to him. With the opportunity to experience these simple schemes with many interesting objects, the schemes become internalized. The child tries out sequences such as shake-transfer-shake. He discovers an object is a poor shaker but an interesting banger, and indicates growing recognition for the toy and its properties by going directly to hitting on surface. This may be either a visual, oral, or manual recognition.

As the child learns that his repetoire of schemes are reinforcing according to variable properties of objects, he develops schemes of the complex class. The turning point is characterized by visual and manual examining behaviors, and sometimes examining at the mouth. The

child turns, pokes, and feels and becomes more interested in properties of the object. He discovers and tries out many new schemes which are based on the properties of the objects such as crumpling or stretching. He reaches that dreadful throwing stage, and systematically drops and picks up, and drops again. Till the child shows this complex class of schemes he is not ready for container concepts or stacking. These behaviors can be taught operantly, of course, but may have no meaning for the child unless based on the necessary readiness.

The social schemes involve beginning representational behaviors. The child demonstrates functional use which has been socially learned, such as taking the cup to mouth as if thinking, "It's an object to drink with." The child's first functional use representations are self-directed. Then they become more social and communicative as the child gives the teacher, mom, or a doll a "drink." Pointing and showing, giving and sharing behaviors increase, and the child may name the object or what it signifies (such as "milk" for cup). The child now has imagery and deferred imitation, and is showing readiness for more formal symbol training in whatever language mode is appropriate. (Bricker & Bricker, 1974; Robbins & Stenquist, Note 5)

Children will show considerable overlap between stages or classes of schemes. The child who enjoys crumpling and tearing paper may still hit, shake, or mouth it. He may show functional use of the cup, and then throw it.

With the very low functioning child I personally feel work in expanding object schemes is one of the most important areas of curriculum. One then begins to see a child play with objects, reduce self-stimulation, and to experience some of the events which lead to incidental learning in normal children. Activities are designed with objects based on the child's current schemes. The child's sensory abilities and interests are considered. For example, a number of children have been interested primarily in the visual characteristic of movement, and quickly discard other objects. I prefer to interpret this as what the child is able to perceive, and not that the child sees and perceives the object the same way I do. For that child I try everything that has a tricky movement such as my slinky collection of different colors.

Many interesting objects are introduced to the child's existing schemes, and as the scheme becomes stronger, we gradually require more accommodation. For example, if the child hits the chime, one might offer a "Happy Apple," chime ball, or balloon with bells. We might then try to accommodate the scheme further to the "Roly-Poly Chimes" or a keyboard toy such as the "Whistling Songbirds."

The "same but different" novelty principle will provide general guidance. If the new action is too discrepant with the old, the child will not be able to accommodate his scheme and will lose interest. This principle also helps in sustaining attention. After the child has just played with a piece of crinkly florist paper, a piece of tissue paper, kleenex, or foil is "same but different," and the child will begin to explore.

In working with a number of children developing beginning object schemes, I am revising my concepts of the importance of textures in very early object scheme development, and am increasingly impressed with the role visual and auditory properties play even with deaf-blind children (who usually have residual in at least one modality). We do sometimes see early fingering, especially of self or mother as described by Fraiberg in her studies of blind infants (1975) and sometimes manual object identification and selection of a favorite toy. Often as the child moves into the complex class of schemes and realizes objects are good for different things, more acceptance or interest in texture emerges spontaneously. We really need research on the role of very early manual tactile functions, and what kind of tactile input is needed at different stages. Meanwhile, I am proceeding more cautiously with my collection of "feelies," especially with avoidant children, and emphasize the meaning of the object or the feel. We may guide the child to feel his own body, or to feel mother's face, or teacher's face, and associate this with identification. We will be sure a "feelie" is classifiable in terms of actions if that is where the child is. As with any kind of sensory stimulation or bombardment, one is wise to let the child's reaction be the guide as to his ability to process the input.

Concluding suggestions.

Cognitive curriculum is most effective when it is applied across activities of a school day or daily life, as well as in structured session teaching. Creative teachers will find many opportunities in activities such as music, art, playground, or snack times, to carry out the individualized goals for children. We feel that when a teacher or parent can do this, learning becomes more interesting, and generalization more certain. Although probes and measurements are more easily carried out during session teaching, recording can occur also throughout the day. Most activities are best recorded in terms of numbers of opportunity trials, rather than frequency per minute data. See Table 4 for sample written objectives and probes.

Appropriate language and pre-linguistic communication must be used and encouraged in all activities. If there is a discrepancy between sensorimotor cognitive and communication levels, careful thought should be given to level and mode of communication. In teaching the parents the parallel and self-talk verbal styles, we try to teach them to relate this to what the child is interested in or thinking about at the moment. Frequently this is reinforcing in itself, and helps lead to the mental set that "things have words."

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TABLE 4
Objective Sheet

CHILD'S NAME: C.M. TEACHER: N.F.

DATE	OBJECTIVE	PREREQUISTE SKILLS	DESCRIPTION OF ADMINISTRATION	BEHAVIOR RECORDED	LONG TERM OBJECTIVE	PROBE	DATE
1-17-74	Explore visual fixation to light spectacle.	Positive orienting r. (heart rate) to light slow Pupil r. light. Need to reduce deviation of gaze.	Centering cushion, supine posture Large light souce (covered flashlight or Lite Brite) 15 sec. trial.	Latency Time + - ? R, L, B 5 trials 1x week.	Unknown potential for functional vision. Visual Fixation 15 sec.	Count duration. Response other stimuli.	
1-17-74	Localizes sound by turning eyes to side within 15 sec.	Quiets to sounds. Mobility of eyes, reduce deviation.	Centering cushion, supine. Explore tilt up later. Vary sounds and voice. Few in, lateral and out of sight. Consecutive. 15 sec. trial.	Stimulus used Latency time. R or L + or - OP (Eyes only) OCP (Eyes and Head 5 trials 1x week.	Localizes and visually identifies source of sound. Meaning for sounds.	Turns eyes and head to side.	
1-17-74	Moves arm to repeat sound spectacle.	Hearing. Limb Movement.	Position supine, pillow, slight head turn. 5 min. baseline 5 min. with tie from wrist to windchimes. Use gross extension movement. Try both arms.	No. extension movements during baseline and with contingent sound whether or not makes sound. R or L.	Batting and eventual reach.	Placement near hand, contact but no tie. Beginning look.	

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Social Interaction in Severely Handicapped Students: Training Basic Social Skills and Social Acceptability

IRENE CARNEY, GRACE CLOBUCIAR, ELLEN CORLEY, BARBARA WILCOX, JOAN BIGLER, LISA FLEISHER, DARLENE PANY, PATRICIA TURNER
University of Illinois at Urbana-Champaign

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INTRODUCTION

As work with severely handicapped extends beyond simple demonstration, and begins to focus on training of the skills necessary for students to survive in complex, heterogeneous, community-based, post-school environments (Brown, Nietupski, & Hamre-Nietupski, 1976), social skill training becomes an increasingly important curriculum area. Recently, a small number of studies have presented procedures for teaching both rudimentary and more sophisticated cooperative play skills to severely handicapped students (Whitman, Mercurio, & Caponigri, 1970; Paloutzian, Hasazi, Streifel, & Edgar, 1971; Redd & Birnbrauer, 1973; Stokes, Baer, & Jackson, 1974; Williams, Pumpian, McDaniel, Hamre-Nietupski, & Wheeler, 1975). While cooperative play is an important feature of social interaction, there are numerous other skills involved in a student's dealings with individuals s/he encounters in school and community settings.

A cluster of skills which is both logically and developmentally prerequisite to the emergence of cooperative play are rudimentary social skills such as those frequently assessed on measures of infant social development (simple reaction to others, seeking attention, evidence of "self-concept," etc.). In addition to the need to develop these basic skills, there will be increasing demand for curriculum and instruction to delineate and teach those social skills which will minimize social discrepancies and thereby enhance the acceptance of the severely handicapped into the educational mainstream of the public schools.

I. BASIC SOCIAL SKILL DEVELOPMENT

Rationale

The importance of social interaction training for severely handicapped students cannot be over-emphasized. A review of the literature on social skills (Williams, Pumpian, McDaniel, Hamre-Nietupski, & Wheeler, 1975) notes that although many severely handicapped individuals have mastered the requisite skills to function in vocational, home and community settings, they may fail to perform appropriately in these environments due to inadequate social skills.

In response to the need for social skills training techniques, researchers have documented procedures effective in developing a variety of social skills ranging from greeting others and simple ball play (Stokes, Baer, & Jackson, 1974; Paloutzian, Hasazi, Streifel, & Edgar, 1971) to sophisticated cooperative play interactions (Williams et al., 1975).

In their analysis of cooperative play, Williams et al. (1975) identify four basic components of interaction: (1) initiating interactions, (2) receiving requests for interaction, (3) sustaining interactions, and (4) terminating interactions. *Initiating* is defined as greeting other people, asking others to engage in activity or conversation, and determining whether they have accepted or declined. *Receiving* involves deciding whether you have the ability and desire to engage in activity or conversation, and acting upon that decision by appropriately accepting or declining the request. *Sustaining* consists of engaging in the activity or verbal exchange until the interaction is completed at which point *terminating* the interaction is accomplished by providing an appropriate salutation and/or cleaning up the area in which the activity has taken place.

While this analysis provides a conceptual framework in which to view high level cooperative play interactions, no such organization has been applied to rudimentary play skills or to the myriad of social interactions that fall outside of the realm of play.

This paper represents an attempt to apply an organizational framework to basic social skill development by (1) identifying the components of social interactions, (2) listing basic interactions, (3) analyzing those interactions according to the paradigm outlined by Williams et al., and (4) establishing a skill/sequence that provides training from zero behavior to mastery of rudimentary social skills.

Organization

A. Skill areas

The training sequence is divided into six skill areas:

1. **Reacts to Others** in which the student is taught to attend to other people.
2. **Reacts to Objects** in which the student is taught to attend to objects that will later be used in training cooperative play.
3. **Seeks Attention** in which the student is taught to obtain assistance by first attracting someone's attention.
4. **Interacts with Objects** in which the student is taught the skills needed to use objects appropriately, to label common play objects and to initiate object use for isolated play.
5. **Demonstrates Concept of Self** in which the student learns to differentiate himself from others and to recognize (label) his/her various emotions.
6. **Interacts with Others** in which the student learns the operations involved in receiving, initiating, sustaining and terminating interactions.

B. Objectives

Each skill area is divided into skills and objectives for training. The sequence of skills does not contain some facets of play and social development that appear on developmental scales. This is because some characteristics of development are either undesirable (self-stimulatory behaviors) or untrainable (startle responses, reflexive behaviors). All of the objectives selected for the sequence can be measured and trained.

The training objectives can be described in terms of:

1. what they intend to teach
   (a) the skills required of interaction (name recognition, object use)

(b) the operations involved in interactions (eye contact, waving)

2. **who** interacts with the student
   (a) the trainer—most objectives are taught with the child interacting first with the trainer and then with
   (b) an adult other than the trainer
   (c) a peer

Adapting the Sequence for Programming

A. Modifications

A teacher who wishes to utilize this sequence for training social interactions may have to modify some objectives to make them suitable for her/his students. Considerations in modifying for particular client groups might include:

1. **Designing of age appropriate tasks.** The tasks in this sequence are intended for use with children. Adults receiving training should be provided with tasks appropriate to their age level.
2. **Allowance for disabilities.** Some objectives are prohibitive for students in wheelchairs or with limited use of their limbs. Such objectives would have to have a modified response requirement or be taught with a prosthetic device.
3. **Modification of response directions and request.** If the student's response is communicated with sign language, the teacher should give the response directions and request by signing while he speaks.
4. **Provisions for performance across settings.** It is the teacher's responsibility to provide opportunities for the student to perform a newly acquired skill across a variety of settings in the student's environment. For instance, if a student has been taught in the classroom to receptively label peers, he should be required to do so in the lunchroom, bedroom, on the playground, etc.
5. **Selection of functional objects for task materials.** Though many of the objectives provide examples of possible task materials, the teacher should select objects which are available in the student's environment and which the student has used or can learn to use functionally.
6. **Further task analysis of training objectives.**

B. Program Components

1. Assessment

The training sequence can also be used as an assessment tool. Prior to the initiation of training, the teacher should conduct a probe to determine the point in the sequence at which a student should begin training. The probe consists of the following sequence:

(a) start with the first skill area
(b) test the last objective in that area
(c) if correct, go to the next area
    if incorrect, work back through the objectives
(d) if incorrect on the first objective for a skill, task analyze that objective and probe
(e) repeat procedures on three consecutive days
(f) identify those objectives for which the student has reached criterion of three consecutive days
(g) start training on the next objective (see Scope and Sequence Chart)

2. Task analysis of objectives

Though the skills have been roughly task analyzed into objectives, further analysis is necessary for identification and sequencing of all of the components of the skill.

3. Establishing criterion

The trainer must establish a criterion for moving from one phase to the next. The criterion for mastery should insure that the student can perform the task across settings, cues, trainers and materials. As in the case where a child is asked to label his/her possessions (1) when the teacher, in the school setting, asks, "Whose desk/chair/lunch is this?" and (2) when the parents, at home, ask, "Who do these pajamas belong to?"

4. Determining a situationally acceptable rate

The task should be performed at a rate that allows for completion within an acceptable period of time. For example, if a task requires the student to return another's greeting, the student's response of smiling, waving, or saying "Hi" must be made within a specified interval (e.g., 6 seconds).

5. Designing an instrument for data collection

The teacher must have direct measures of the student's performance in order to verify that the skill has been learned.

C. Concurrent Programs

The skill areas in this sequence assume proficiency in related instructional areas. These related skills will not be taught in the social interaction curriculum, but should be provided for in concurrent programs in:

1. Imitation training
2. Direction following

It is also assumed that behavior management programs are in effect, providing interventions on inappropriate or interferring behaviors.

Interpretation and Use of Sequence

A. Response Alternatives

Under many of the objectives in this sequence, the reader will note that three columns in which alternative ways of performing the response are presented.

These alternatives are ordered from the least to the most "sophisticated" — for instance:
When *T* tickles, pats or touches S, S will
least sophisticated
—orient head and trunk toward *T*
more sophisticated
—turn face toward and look at *T*
most sophisticated
—turn face toward and establish eye contact with *T*

This arrangement of alternative responses allows a student to reach criterion even though he does not have the most sophisticated means of responding at his disposal. Though a student may master an objective and proceed through the skill sequence with the minimum acceptable response, as he progresses through the curriculum, he should be encouraged to respond in the most sophisticated fashion.

B. Scope and Sequence Chart (see Table 1)

The Scope and sequence chart is a means of illustrating the approximate order in which objectives should be trained. On the chart below, the skills in the sequence are listed vertically and the objectives for those skills are listed horizontally.

It is conceivable that several of the skills in the sequence would be taught concurrently. While some skills serve as prerequisites to later skills (and are charted in that order), many skills are independent of the others and their placement in the chart is somewhat arbitrary. To determine where to begin training and how to proceed through the sequence, follow these guidelines:

1. Start in the upper left-hand corner of the chart
2. Locate all of the skills and objectives listed in that column
3. Select priority skills for which training will begin
4. As the student reaches criterion for the objectives in the first column, proceed to the right through the enabling objectives for each skill until the terminal objective is mastered.
5. When entering a new column to the right, begin training on skills whose first objective is listed in that column.

A sample instructional program for teaching a basic social interaction skill is included in Appendix A.

Skill Sequence Objectives

I. REACTS TO OTHERS

A. *Reacts to being touched by others*

1. When *T* hugs, touches or pats S, S will not push *T* away, tense muscles or pull body away.
2. When *T* tickles, touches or pats S, S will
—turn face toward *T*.
—turn face toward and look at *T*.
—turn face toward and establish eye contact (for at least 2 sec.).

B. *Turns toward an adult speaker who calls his name*

1. When *T* stands beside S and says *S's* name, S will, within 5 seconds
—turn toward *T*.
—turn toward and look at *T*.
—turn toward and establish eye contact.
2. When *T* stands 5 ft. from S and calls *S's* name, S will, within 10 seconds
—turn toward *T*.
—turn toward and look at *T*.
—turn toward and establish eye contact.
3. When *T* stands across the room from S and says *S's* name, S will, within 10 seconds
—turn toward *T*.
—turn toward and look at *T*.
—turn toward and establish eye contact.

C. *Turns toward a peer speaker who calls his name*

1. When a peer stands beside S and says *S's* name, S will
—turn toward peer.
—turn toward and look at peer.
—turn toward and establish eye contact (for at least 2 sec.).
2. When a peer stands 5 ft. from S and calls S's name, S will
—turn toward peer.
—turn toward and look at peer.
—turn toward and establish eye contact.

D. *Turns toward a person who enters the room*

1. When S is located within 3 ft. from the entrance to the room and a person enters the room, S will
—turn toward the person.
—turn toward and look at the person.
—N/A
2. When S is located within 10 ft. from the entrance to the room and a person enters the room, S will
—turn toward the person.
—turn toward and look at the person.
—N/A
3. When S is located across the room from the entrance to the room and a person enters the room, S will
—turn toward the person.
—turn toward and look at the person.
—N/A

E. *Watches the movements of others*

1. When *T* bounces a ball within 3 ft. of S, S will watch *T's* movements for a minimum of
—2 sec.
—4 sec.
—6 sec.
2. When *T* claps his hands within 3 ft. of S, S will watch *T's* movements for a minimum of
—2 sec.
—4 sec.
—6 sec.

TABLE 1: SCOPE AND SEQUENCE CHART FOR BASIC SKILL DEVELOPMENT

| OBJECTIVES | | |

| | | |

3. When *T* pours juice within 3 ft. of S, S will watch *T*'s movements for a minimum of
   —2 sec.
   —4 sec.
   —6 sec.
4. When *T* walks across the room, S will watch *T*'s movements for a minimum of
   —2 sec.
   —6 sec.
   —8 sec.

F. Establishes and maintains eye contact

1. When *T* is sitting opposite S and calls S's name, S will establish and maintain eye contact for
   —2 sec.
   —4 sec.
   —6 sec.
2. When a peer is sitting near S and touches S's arm/shoulder and/or calls S's name, S will establish and maintain eye contact for 1 sec.
3. When a peer is sitting near S and touches S's arm/shoulder and/or calls S's name, S will establish and maintain eye contact for
   —2 sec.
   —4 sec.
   —6 sec.
4. When an adult (other than *T*) is sitting near S and calls S's name, S will establish and maintain eye contact for
   —2 sec.
   —4 sec.
   —6 sec.

G. Turns toward, looks at, and maintains gaze in the direction of a speaker who addresses the whole group

1. When *T* gives a verbal attention signal, ("Look at me"), S will turn and look at *T* for 2 sec.
2. When *T* gives a verbal attention signal to the group and continues to address the group, S will turn toward and look at *T* for
   —8 sec.
   —10 sec.
   —12 sec.
3. When an adult speaker (other than *T*) gives a verbal attention signal to the group and continues to address the group, S will turn toward and look at *T* for
   —8 sec.
   —10 sec.
   —12 sec.

H. Follows simple commands

1. When *T* says, "Sit down," S will sit.
2. When *T* says, "Stand up," S will stand.
3. When *T* says, "Walk," S will walk.
4. When *T* says, "Raise your hand," S will raise his/her hand.
5. When *T* says, "Wave your hand," S will wave his/her hand.
6. When *T* says, "Shake your head," S will shake his/her head.
7. When *T* says, "Nod your head," S will nod his/her head.
8. When *T* says, "Clap your hands," S will clap his/her hands.
9. When *T* says, "Run," S will run.

I. Imitates actions of others

1. When *T* says, "Do this," and models raising hand for 3 seconds, S will raise his/her hand.
2. When *T* says, "Do this," and models waving hi for 3 seconds, S will wave hi.
3. When *T* says, "Do this," and models bye-bye for 3 seconds, S will wave bye-bye.
4. When *T* says, "Do this," and models shaking his/her head for 3 seconds, S will shake his/her head.
5. When *T* says, "Do this," and models nodding head for 3 seconds, S will nod his/her head.
6. When *T* says, "Do this," and models clapping hands for 3 seconds, S will clap his/her hands.

II. REACTS TO OBJECTS

A. Turns in the direction of a noise

1. When *T* stands behind S and makes a loud noise, (with bell, drum, shaker) within 3 in. of S's ear, S will
   —turn 45 degrees
   —turn 90 degrees
   —turn and glance at the object
   in the direction of the noise.
2. When *T* stands behind S and makes a quiet noise (music box, stop watch, squeaky toy) within 3 in. of S's ear, S will
   —turn 45 degrees
   —turn 90 degrees
   —turn and glance at the object
3. When *T* stands behind S and makes a quiet noise within 3 ft. of S's ear, S will
   —turn 45 degrees
   —turn 90 degrees
   —turn and glance at the object
   in the direction of the noise.

B. Looks at moving objects

1. When *T* says "Look" and moves, from S's left to right, a large reinforcing object (that requires 2 hands; beach ball, large stuffed toy) within 18 in. of S, S will look at the object for 1 second.
2. When *T* says "Look" and moves, from S's left to right, a small reinforcing object (that requires 1 hand; a music box, an 8 in. truck, food on a spoon) within 18 in. of S, S will look at the object for 1 second.
3. When *T* moves, from S's left to right, a small reinforcing object, within 3 ft. of S, S will look at the object for 1 second.

C. Maintains visual contact on a stationary object

1. When *T* says "Look at this" and holds a small reinforcing object 18 in. from S, at eye level, S will maintain visual contact for
   —3 sec.
   —4 sec.
   —5 sec.
2. When *T* says "Look at this" and points to an object on the table 18 in. in front of S, S will maintain visual contact for
   —3 sec.
   —4 sec.
   —5 sec.

D. Looks at and tracks moving objects

1. When *T* stands within 18 in. of the S and says "Look at this," and moves a small reinforcing object from S's left to right, S will look at the object and track the object for a distance of
   —1 ft.
   —2 ft.
   —3 ft.
2. When *T* stands approximately 3 ft from S and says "Look at this" and move a small reinforcing object from S's left to right, S will look at the object and track the object.

III. SEEKS ATTENTION

A. Seeks attention for personal assistance in manipulating the environment

1. When S sees food out of his reach, S will direct others attention to the food by
   —gesture
   —noise (other than crying).
   —symbolic sound, words or alternate communication.
2. When S drops an object out of reach, S will direct others attention to the object by
   —gesture
   —noise (other than crying).
   —symbolic sound, words or alternate communication.
3. When S is in an unnatural position (body part stuck, fallen on floor) and unable to reposition, S will direct others attention to the situation by
   —gesture
   —noise (other than crying).
   —symbolic sound, words or alternate communication.
4. When S is unable to move from one location to another, S will direct others attention to the situation by
   —gesture
   —noise (other than crying).
   —symbolic sound, words or alternate communication.
5. When S sees an object out of his reach, S will direct others attention to the object by
   —gesture
   —noise (other than crying).
   —symbolic sound, words or alternate communication.

B. Approaches another person and seeks attention

Before S demands attention from a person located across the room, S will approach the person by
   —crawling, creeping or scooting.
   —N/A
   —walking, walking with a prosthetic, or moving wheel chair.

C. Approaches and touches another person when other means of seeking attention are unsuccessful.

When S has unsuccessfully attempted, by previously trained means to gain another person's attention, S will touch the person.

D. Seeks attention for assistance with bodily needs

When S needs to use the toilet, S will seek others attention to obtain permission to go/assistance in going to the bathroom.

E. Waits to demand attention until person is free to respond

1. When S approaches a person who is interacting with another person, S will wait until the interaction is terminated.
2. When S approaches a person who is engaged in a task, S will wait until the person directs his attention to S.

IV. INTERACTS WITH OBJECTS

A. Grasps objects when it is presented near S's hand

1. When *T* holds the handle of a bell against S's palm, and says "Hold bell," S will palm-grasp the object.
2. When *T* holds a small squeaky toy against the palm of S's hand and says, "Hold toy," S will palm-grasp the object.
3. When *T* holds the handle of a spoon against the palm of S's hand, and says "Hold spoon," S will palm-grasp the spoon.

B. Grasps and holds an object for a specified duration of time

1. When *T* holds the handle of a bell against S's palm and says "Hold bell," S will grasp the handle and hold the object for
   —4 sec.
   —6 sec.
   —10 sec.
2. When *T* holds a squeaky toy against the palm of S's hand, and says, "Hold toy," S will palm-grasp the object and hold the object for
   —4 sec.
   —6 sec.
   —10 sec.
3. When *T* holds the handle of a spoon against the palm of S's hand, and says, "Hold spoon," S will palm-grasp the spoon for
   —4 sec.
   —6 sec.
   —10 sec.

C. Reaches toward, grasps and holds an object

1. When *T* holds the handle of the bell within 3 in. of S's hand and says "Get bell," S will reach for, grasp and hold the bell.
2. When *T* holds the handle of a spoon within 6 in. of S's hand, and says "Get spoon," S will reach for, grasp and hold the spoon.
3. When *T* holds a small squeaky toy within 12 in. of S's hand and says "Get toy," S will reach for, grasp and hold the toy.
4. When S is seated at a table with his hands on the table and *T* places a spoon on the table 3 in. from S's hands, and says "Get spoon," S will reach for, grasp and hold the spoon.
5. When S is seated at a table with his hands on the table and *T* places an object on the table 8 in. from S's hands, and says "Get _____," S will reach, grasp and hold the object.

D. Picks up and holds objects with two hands

When S is seated at a table with his hands on the table and *T* places a large reinforcing object (that requires two hands: beach ball, large stuffed toy) on the table between S's hands, and *T* says "Pick up _____," S will grasp the object with one hand on each side and lift up and hold the object for
—4 sec.
—6 sec.
—10 sec.

E. Uses objects appropriately

1. When S is seated at a table and *T* places an object with movable parts (music box, bus box, dump truck) on the table in front of S, and says "Play with _____," S will manipulate the movable parts to make an observable change in the object with
—3 responses/30 sec.
—5 responses/30 sec.
—7 responses/30 sec.
2. When *T* presents an object that can be appropriately manipulated by pushing (ball, truck, wagon) and says "Push," S will push the object a minimum of 3 times.
3. When *T* presents an object that can be appropriately manipulated by pulling (music boxes with strings, toy animals with strings, toys with handles) and says "Pull," S will pull the object.
4. When *T* presents an object that can be appropriately manipulated by shaking (maracas, bells) and says "Shake," S will shake the object 3 times.
5. When *T* presents an object that can be appropriately used by hitting (drums, xylophone, pegs with a hammer) and says, "Hit _____," S will hit the object 3 times.
6. When *T* presents 5 objects that can be appropriately used for stacking (blocks, cups, logs) and says "Stack/build _____," S will stack all of the objects.
7. When *T* presents an object with removable parts (ring tree, puzzle, shape box) which has been disassembled and *T* says "Put it in/put it together," S will assemble the object appropriately.
8. When *T* presents an object with removable parts and says "Play with _____," S will disassemble the object and reassemble it at an appropriate rate.
9. When *T* presents play object and says "Play with _____," S will make previously trained manipulations appropriate to that object for
—2 min.
—4 min.
—10 min.

F. Takes objects in and out of containers

1. When *T* provides a box or canister which contains play objects or parts of objects and says "Take them out," S will remove the objects from the container and place them on the playing surface.
2. When *T* provides an empty box or container for collection of play objects or parts of objects and says "Put them away," S will pick up the objects and place them in the container.

G. Initiates play with objects

1. When *T* places play object or container within reach of S's hand, S will reach for the object and play with it using previously trained manipulations for
—2 min.
—4 min.
—10 min.
2. When *T* gives the signal to play, S will select a container/play object and take it to the play area and play with it using previously trained manipulations for
—2 min.
—4 min.
—10 min.
3. When S has a period of unstructured time, S will go to the location where play materials are kept, select a container/play object, take it to the play area and play using previously trained manipulations for
—2 min.
—4 min.
—10 min.

H. Label common play objects

1. When *T* provides 3 common play objects of which S has previously demonstrated appropriate use, and presents a match for one of the objects and says "This is (*truck*). Put (*truck*) with (*truck*)," S will place the object with its match.
2. When *T* presents 3 common play objects of which S has previously demonstrated match-to-sample, and says, "Give me (*truck*), S will choose the appropriate object and hand it to *T*.
3. When *T* presents a common play object which S has previously labeled receptively and says "What is this?", S will say, sign or indicate by alternate communication, the label for that object.

V. DEMONSTRATES CONCEPT OF SELF

A. Identifies self when name is spoken

When *T* says, "Where is (*S's name*)? Raise your hand," S will respond by raising his hand.
(Refer to: Section I — objective B through G
Section VI — objective B)

B. Labels own body parts

1. When *T* says, "Touch your (*large body part*)" (hands, feet, tummy), S will touch the body part named.
2. When *T* says, "Touch your (*small body part*)" (eyes, nose, finger), S will touch the body part named.
3. When *T* touches one of S's body parts and says, "What is this?", S will say or sign the label for the body part touched.

C. Discriminates own body parts from others

1. When *T* says, "Touch my ....," S will touch *T*'s body part named.
2. When *T* touches one of S's body parts and says, "Whose (*nose*) is this," S will respond by
   —pointing to self.
   —saying/signing his name.
   —saying/signing possessive pronoun (my, mine).
3. When *T* touches one of *T*'s own body parts and says, "Whose .... is this?", S will respond by
   —pointing to *T*.
   —saying/signing *T*'s name.
   —saying/signing possessive pronoun (your/yours).

D. Identifies own image in mirror

1. When S is standing alone in the mirror and *T* says, "Show me (*S's name*)," S will touch his image in the mirror.
2. When S and *T* are standing in front of a mirror and *T* says, "Show me (*S's name*)," S will touch his image in the mirror.
3. When S and a peer are standing in front of a mirror and *T* says, "Show me (*S's name*)," S will touch his image in the mirror.

E. Identifies self in a photograph

1. When *T* presents a photograph of S pictured alone and *T* says, "Show me (*S's name*)," S will touch his image in the photographs.
2. When *T* presents a photograph of S pictured with *T* and says, "Show me (*S's name*)," S will touch his image in the photograph.
3. When *T* presents a photograph of S pictured with a peer and says, "Show me (*S's name*)," S will touch his image in the photograph.

F. Identifies family members in photograph

1. When *T* provides a photograph of S's mother/father pictured alone and *T* says, "Show me *Mommy/Daddy*," S will touch the apppropriate figure in the photograph.
2. When *T* provides a photograph of S's parents pictured together and *T* says, "Show me *Mommy/Daddy*," S will touch the image of the parents named.
3. When *T* provides a photograph of one of S's siblings pictured alone and *T* says, "Show me (*name*)," S will touch the image.
4. When *T* provides a photograph of S's family pictured as a group and says, "Show me (*name one*)," S will touch the image of the person named.
5. When *T* provides a photograph of S's family, points to the image of one family member, and says "Who is this?", S will respond by saying/signing that person's name.

G. Identifies self by name

1. When *T* says, "Who are you?", S will respond by saying/signing his name.
2. When an adult (other than *T*) says, "Who are you?", S will respond by saying/signing his name.
3. When a peer says, "Who are you?", S will respond by saying/signing his name.
4. When asked "What is your name?", S will respond by saying/signing his name.

H. Identifies self as male/female

1. When *T* says, "Are you a (*boy*)?", S will respond by
   —nodding/shaking his head.
   —N/A
   —saying/signing yes or no.
2. When *T* says "Are you a boy or girl?", S will respond with
   —1 word ("boy").
   —2 words (a boy).
   —3 or more words (I a boy).

I. Identifies others as male/female

1. When *T* points to another student and says "Is (*name*) a (*boy*)?", S will respond by
   —nodding/shaking his head.
   —N/A
   —saying/signing yes or no.
2. When *T* points to another student and says "Is (*name*) a boy or a girl?", S will respond with
   —1 word ("boy").
   —2 words ("a boy").
   —3 or more words ("He a boy").

J. Labels feeling

1. When *T* presents a photograph of S smiling and says, "Look at your face. Did you feel *happy*?", S will respond correctly by
   —nodding/shaking his head.
   —N/A
   —saying/signing yes or no.
2. When *T* presents a photograph of S frowning and says, "Look at your face. Did you feel *sad*?", S will respond correctly by
   —nodding/shaking his head.
   —N/A
   —saying/signing yes or no.
3. When *T* presents a photograph of S grimacing and

says, "Look at your face. Did you feel *angry*?", S will respond correctly by
—nodding/shaking his head.
—N/A
—saying/signing yes or no.

4. When S expresses happiness (smiling, clapping) and *T* says, "Do you feel *happy*?", S will respond correctly by
—nodding/shaking his head.
—N/A
—saying/signing yes or no.
5. When S expresses sadness (frowning, lowering of head, crying), and *T* says, "Do you feel *sad*?", S will respond correctly by
—nodding/shaking his head.
—N/A
—saying/signing yes or no.
6. When S expresses anger (grimacing, hitting, banging) and *T* says, "Do you feel *angry*?", S will respond by
—nodding/shaking his head.
—N/A
—saying/signing yes or no.
7. When *T* presents a photograph of S smiling and says, "How do you feel?", S will respond by saying/signing "happy."
8. When *T* presents a photograph of S frowning and says, "How do you feel?", S will respond by saying/signing "sad."
9. When *T* presents a photograph of S grimacing/banging and says, "How do you feel?", S will respond by saying/signing "angry."
10. When S expresses happiness and *T* says, "How do you feel?", S will respond by saying/signing "happy."
11. When S expresses sadness and *T* says, "How do you feel?", S will respond by saying "sad."
12. When S expresses anger and *T* says, "How do you feel?", S will respond by saying "angry."

VI. INTERACTS WITH OTHERS

A. Receives interactions

1. Returns a hug
   (a) When *T* hugs S, S will position his arms around *T*'s torso and apply pressure, then release.
   (b) When a peer hugs S, S will position his arms around the peer's torso and apply pressure.
   (c) When an adult (other than *T*) hugs S, S will position his arms around the adult's torso and apply pressure.
2. Returns a smile
   (a) When *T* positions his face within 1 ft. and level with S's face and smiles, S will respond by smiling.
   (b) When *T* stands 3 ft. in front of S and establishes eye contact with S, S will respond by smiling.
   (c) When a peer stands approximately 3 ft. from S, establishes eye contact and smiles, S will respond by smiling.
3. Gives object to other who has requested it.
   (a) When *T* points to an object near S and requests the object by saying, "Will you give me .....?", S will hand the object to *T*.
   (b) When a peer requests an object near S by pointing to the object and (if verbal) saying, "Will you give me .....?", S will hand the object to the peer.
4. Returns greetings
   (a) When *T* says "Hi (*S's name*)" and waves to S, S will return the greeting by
   —waving.
   —saying/signing "Hi."
   —saying/signing "Hi, name."
   (b) When *T* says "Hi (*S's name*)" to S, S will return the greeting by
   —waving.
   —saying/signing "Hi."
   —saying/signing "Hi, name."
   (c) When a peer says of signs "Hi" and/or waves to S, S will return the greeting by
   —waving.
   —saying/signing "Hi."
   —saying/signing "Hi, name."
   (d) When an adult (other than *T*) says "Hi" to S, S will return the greeting by
   —waving.
   —saying/signing "Hi."
   —saying/signing "Hi, name."
5. Receives cooperative play
   (a) When *T* presents a play object to S and says, "Let's play," S will accept the object and remain in proximity of *T* for a minimum of 10 sec.
   (b) When *T* presents a play object to S and says, "Let's play," S will accept the object, remain in proximity of *T*, while beginning to use the object with previously trained manipulations.
   (c) When an adult (other than *T*) presents a play object to S and says, "Let's play," S will accept the object and remain in proximity of the adult, while beginning to use the object with previously trained manipulations.
   (d) When a peer presents a common play object to S and, if verbal, says or signs, "Let's play," S will accept the object, remain in proximity of the peer, while beginning to use the objects with previously trained manipulations.
   (e) When *T* presents 3 common play objects which S has previously labeled receptively, and says, "let's play (*truck*). Get (*truck*)," S will get the object and begin to use the object with previously trained manipulations.
   (f) When S is using a play object and an adult (other than *T* says, "Let's play (*truck*),") S will remain in proximity of the adult and pass the object to the adult.
   (g) When S is using a play object and a peer initiates play (says or signs, "Let's play, Play (*truck*),") S will remain in proximity of the peer and pass the object to the peer.

(h) When *T* presents a common play object which S has previously labeled receptively, and says, "Do you want to play (*truck*)?", S will respond by
—nodding/shaking his head.
—N/A
—saying/signing yes or no.

(i) When an adult (other than *T*) presents a common play object which S has previously labeled receptively, and says, "Do you want to play (*truck*)?", S will respond by
—nodding/shaking his head.
—N/A
—saying/signing yes or no.

(j) When a peer presents a common play object which S has previously labeled receptively and initiates play (says/signs "Do you want play?"), S will respond by
—nodding/shaking his head.
—N/A
—saying/signing yes or no.

(k) When *T* asks, "Do you want to play _____?", (labeled object *not* present), S will respond by
—nodding/shaking his head.
—N/A
—saying/signing yes or no.

(l) When an adult (other than *T*) asks, "Do you want to play _____?", S will respond by
—nodding/shaking his head.
—N/A
—saying/signing yes or no.

(m) When a peer asks, "Do you want to play _____?", S will respond by
—nodding/shaking his head.
—N/A
—saying/signing yes or no.

6. Answer questions

(a) When *T* asks a question requesting a yes/no answer, (Are you hungry?; Did you pull wagon?; Are you (*name*)?), S will respond by
—nodding/shaking his head.
—N/A
—saying/signing yes or no.

(b) When an adult (other than *T*) asks a question requesting a yes/no answer, S will respond by
—nodding/shaking his head.
—N/A
—saying/signing yes or no.

(c) When a peer asks a question requesting a yes/no answer, S will respond by
—nodding/shaking his head.
—N/A
—saying/signing yes or no.

(d) When *T* asks a question that requires a response other than yes/no, (What's your name?; What do you want to do?; How do you feel?) S will sign or say
—one word ("truck").
—2 words ("play truck").
—3 or more words ("I want play truck").

(e) When an adult (other than *T*) asks a question that requires a response other than yes/no, S will sign or say
—one word
—2 words
—3 or more words

(f) When a peer asks a question that requires a response other than yes/no, S will sign or say
—one word
—2 words
—3 or more words

7. Recognizes peers, family members and teachers

(a) When S is seated between 2 other people and *T* says, "Where is (*name*)?", S will respond by
—looking toward the person named.
—pointing towards/touching the person named.
—saying/signing "there," "here."

(b) When S is in a group of 3 or more, and *T* says, "Where is _____?," S will respond by
—looking toward the person named.
—pointing towards/touching the person named.
—saying/signing "there," "here."

(c) When *T* points to another person, whom S has previously labeled receptively, S will respond by saying or signing that person's name.

8. Shows approval to other's work, skill, or possessions.

(a) When a peer achieves a goal (earns treat, does good work, makes all his points) and shows it to S, and *T* prompts S to approve ("_____ did good work. Let's clap"), S will demonstrate approval by
—smiling at peer.
—hugging/patting peer, clapping for peer.
—saying/signing praise ("Good," "Like it").

(b) When a peer achieves a goal and shows it to S, and *T* says a reminder ("John did good work. How do you show him?"), S will demonstrate approval by
—smiling at peer.
—hugging/patting peer, clapping for peer.
—saying/signing praise.

(c) When a peer achieves a goal, S will demonstrate approval by
—smiling at peer.
—hugging/patting peer, clapping for peer.
—saying/signing praise.

9. Discriminates appropriate time, place and situation (S's ability, preferences, other people present and other ongoing activities) for receiving interaction

(a) When *T* initiates an activity that is appropriate to the time and situation, and says "Should we play *here?*", S will respond by
—nodding/shaking his head.
—N/A
—say/sign yes or no.
and S will continue or terminate the interaction accordingly.

(b) When *T* initiates an interaction that is ap-

propriate to the place and situation and says, "Should we play *now*?", S will respond by
—nodding/shaking his head.
—N/A
—saying/signing yes or no.
and S will continue or terminate the interaction accordingly.

(c) When *T* initiates an interaction that is appropriate to situation, and says, "Is this when we *play*?" and "Is this where we *play*?", S will respond to each question by
—nodding/shaking his head.
—N/A
—saying/signing yes or no.
and S will continue or terminate the interaction accordingly.

(d) When *T* initiates an interaction that is appropriate to the place and time, and asks the questions: Can you .....? Do you want .....? Should you .....?, S will respond to each question by
—nodding/shaking his head.
—N/A
—saying/signing yes or no.
and S will continue or terminate the interaction accordingly.

(e) When *T* initiates an interaction that is appropriate to the time and says, "Is this the place for .....?", "Can you do this?", "Do you want to do this?", "Should you do this?", S will respond to each question by
—nodding/shaking his head.
—N/A
—saying/signing yes or no.
and S will continue or terminate the interaction accordingly.

(f) When *T* initiates an interaction that is appropriate to the place and says, "Is this the time for .....?", "Can you do this?", "Do you want to do this?", "Should you do this?", S will respond to each question by
—nodding/shaking his head.
—N/A
—saying/signing yes or no.
and S will continue or terminate the interaction accordingly.

(g) When *T* initiates an interaction and says, "Is this the time for .....?", "Is this the place for .....?", "Can you do this?", "Do you want to do this?", S will respond to each question by
—nodding/shaking his head.
—N/A
—saying/signing yes or no.
and S will continue or terminate the interaction accordingly

(h) When *T* initiates an interaction, S will discriminate if the interaction is appropriate to the time, place and situation and participate or terminate the interaction accordingly.

(i) When a peer initiates an interaction, S will discriminate if the interaction is appropriate to the time, place and situation and participate or terminate the interaction accordingly.

B. Initiates interactions with others

1. Greets others

(a) When *T* approaches S and stands approximately 3 ft. from S, S will greet *T* within 30 seconds by
—smiling.
—smiling and waving.
—saying/signing a greeting ("hi").

(b) When an adult (other than *T*) approaches S and stands approximately 3 ft. from S, S will greet the adult within 30 seconds by
—smiling.
—smiling and waving.
—saying/signing a greeting ("hi").

(c) When a peer approaches S and stands approximately 3 ft. from S, S will greet the peer within 30 seconds by
—smiling.
—smiling and waving.
—saying/signing a greeting.

(d) When *T* enters the room, and makes eye contact with S, S will greet *T* within 30 seconds by
—smiling.
—smiling and waving.
—saying/signing a greeting.

(e) When an adult (other than *T*) enters the room and makes eye contact with S, S will greet the adult within 30 seconds by
—smiling.
—smiling and waving.
—saying/signing a greeting.

(f) When a peer enters the room and makes eye contact with S, S will greet the peer within 30 seconds by
—smiling.
—smiling and waving.
—saying/signing a greeting.

(g) Once S's greeting has been reciprocated, S will not repeat greetings to that person.

2. Requests objects from others

(a) When *T* holds a reinforcing object in front of S, S will request the object by
—pointing.
—N/A
—saying/signing the request (I want (*ball*)).

(b) When *T* is seated near a reinforcing object, S will request the object by
—pointing.
—N/A
—saying/signing the request.

(c) When a peer is playing with an object near S, S will request the object by
—pointing.
—N/A
—saying/signing the request.

(d) When an object is not available, S will request the object from an adult by saying or signing
—"(*label*)".
—"want (*label*)".
—"I want (*label*)"

3. Initiates cooperative play
   (a) When S sees a peer or peers playing with an object, S will approach the peer and
   —sit near peer.
   —sit and point to object
   —say/sign the request to play. ("Let's play")
   (b) When S has a play object, S will approach *T* and
   —sit near *T*.
   —sit and offer the object.
   —say/sign a request to play.
   (c) When S has a play object, S will approach a peer and
   —sit near peer.
   —sit and offer the object.
   —say/sign the request to play.
   (d) When S has an unstructured period of time, S will approach *T* and initiate play by signing or saying
   —"Play."
   —"Want play."
   —"Let's play." "Do you want play?"
   (e) When S has an unstructured period of time, S will approach a peer and initiate play by signing or saying
   —"Play."
   —"Want play."
   —"Let's play." "Do you want play?"
4. Seeks approval from others for work, skill or possession
   (a) When S achieves a goal (earns a treat, does good work, makes all his points) or acquires a new possession, S will show the product to *T* by
   —holding product.
   —pointing to object and saying "look."
   —describing achievement by saying/signing.
   (b) When S achieves a goal or acquires a new possession, S will show the product to a peer by
   —holding product.
   —pointing to object and saying "look."
   —describing achievement by saying/signing.
5. Seeks affiliation (physical contact or proximity) with familiar person while performing actions
   (a) When *T* says, "Walk with a friend," S will select a peer and grasp his hand and walk with him or push his wheel chair until they reach their destination.
   (b) When *T* says, "Sit with a friend," S will select a peer and sit down with him.
6. Helps one who has difficulty manipulating the environment
   (a) When S sees a person attempting to grasp an object out of reach, S will assist that person by handing them the object or by directing an adult's attention to the situation.
   (b) When S sees a person who is calling attention to an unnatural position which he is unable to reposition, S will assist that person by repositioning him or by directing an adult's attention to the situation.
   (c) When S sees a person who is calling attention to his inability to move from one location to another, S will assist that person by helping him to move or directing an adult's attention to the situation.
7. Initiates conversation
   (a) When S is near *T*, S will initiate conversation by seeking information ("What are you doing?", "How are you?", "Where did you get that?") by
   —2 word questions
   —N/A
   —3 or more word questions ("What you doing?")
   (b) When S is near an adult (other than *T*), S will initiate conversation by seeking information by
   —2 word questions
   —N/A
   —3 or more word questions.
   (c) When S is near a peer, S will initiate conversation by seeking information by
   —2 word questions
   —N/A
   —3 or more word questions.
   (d) After S greets an unfamiliar person, S will introduce himself to that person by
   —pointing to self and saying/signing name.
   —saying/signing "I am (*name*)".
   —saying/signing "I am (*name*). Who are you?"
   (e) After S has greeted an unfamiliar person, S will initiate conversation by seeking information by
   —2 or more words.
   —N/A
   —3 or more words.
8. Discriminates appropriate time, place and situation (other ongoing activities, receiver's activity) for initiation of interaction
   (a) When S initiates an interaction that is appropriate to time and situation, and *T* says, "Is this the place for _____?", S will respond by
   —nodding/shaking his head.
   —N/A
   —saying/signing yes or no.
   and S will continue or terminate the interaction accordingly.
   (b) When S initiates an interaction that is appropriate to place and situation and *T* says, "Is this the time for _____?", S will respond by
   —nodding/shaking his head.
   —N/A
   —saying/signing yes or no

and S will continue or terminate the interaction accordingly.

(c) When S initiates an interaction that is appropriate to place and time and *T* says, "Should you be _____?", S will respond by
—nodding/shaking his head.
—N/A
—saying/signing yes or no.
and S will continue or terminate the interaction accordingly.

(d) When S initiates an interaction that is appropriate to the situation and *T* says, "Is this the time for _____?" and "Is this the place for _____?", S will respond to each question by
—nodding/shaking his head.
—N/A
—saying/signing yes or no.
and S will continue or terminate the interaction accordingly.

(e) When S initiates an interaction that is appropriate to time and *T* says, "Is this the place for _____?" and "Should you be _____?", S will respond to each question by
—nodding/shaking his head.
—N/A
—saying/signing yes or no.
and S will continue or terminate the interaction accordingly.

(f) When S initiates an interaction that is appropriate to place and *T* says, "Is this the time for _____?" and "Should you be _____?", S will respond to each question by
—nodding/shaking his head.
—N/A
—saying/signing yes or no.
and S will continue or terminate the interaction accordingly.

(g) When S initiates an interaction and *T* says, "Is this the place for _____?" and "Is this the time for _____?" and "Should you be _____?", S will respond to each question by
—nodding/shaking his head.
—N/A
—saying/signing yes or no.
and S will continue or terminate the interaction accordingly.

C. *Sustaining interactions*

1. Sustains ongoing cooperative play activity after activity has been initiated and received.
   (a) When S is participating in a play interaction, S will remain in a situation appropriate in proximity to the other player(s) until the interaction is terminated (by the end of the session, by the completion of the game, or by another player).
   (b) When S is awaiting his turn while participating in a play interaction, S will attend to the other players as they take their turns by
   —glancing at the others.
   —N/A
   —watching the other player's movements for the duration of his turn.
   (c) When S is participating in a play interaction, S will use the materials with previously trained manipulations appropriate to the game for the duration of the game.
   (d) When S is using materials in a play interaction, S will complete his turn at a rate appropriate to the activity and pass the materials to the next player.
   (e) When S is participating in a play interaction, S will share the materials with the other players, remain in proximity to them, attend to the other players as they take their turns, take his turn, using materials correctly and at an appropriate rate until the game is terminated.
2. Sustains conversations that have been initiated and received
   (a) When S is participating in a conversation with *T*, S will remain within 1-3 ft. of *T* until the conversation is terminated (by the end of the session or the end of the conversation).
   (b) When S is participating in a conversation with an adult other than *T*, S will remain within 1-3 ft. of that adult until the conversation is terminated.
   (c) When S is participating in a conversation with a peer, S will remain within 1-3 ft. of that peer until the conversation is terminated.
   (d) When S is participating in a conversation with *T*, S will maintain eye contact with *T* until the conversation is terminated.
   (e) When S is participating in a conversation with an adult other than *T*, S will maintain eye contact with that adult until the conversation is terminated.
   (f) When S is participating in a conversation with a peer, S will maintain eye contact with that peer until the conversation is terminated.
   (g) When S is participating in a conversation with *T*, S will answer questions addressed to him by signing/saying
   —1 word answer.
   —2 word answer.
   —3 or more word answer.
   (h) When S is participating in a conversation with an adult other than *T*, S will answer questions addressed to him by signing/saying
   —1 word answer.
   —2 word answer.
   —3 or more word answer.
   (i) When S is participating in a conversation with a peer, S will answer questions addressed to him by signing/saying
   —1 word answer.
   —2 word answer.
   —3 or more word answer.

(j) When S is participating in a conversation with *T*, S will obtain information by addressing questions to *T* by signing/saying
—2 word question.
—3 word question.
—4 or more word question.

(k) When S is participating in a conversation with an adult other than *T*, S will obtain information from that adult by addressing questions to him by saying/signing
—2 word question.
—3 word question.
—4 or more word question.

(l) When S is participating in a conversation with a peer, S will obtain information from that peer by addressing questions to him by saying/signing
—2 word question.
—3 word question.
—4 or more word question.

(m) When S is participating in a conversation with another speaker, S will stand within 1-3 ft. of the other speaker, maintain eye contact, and answer and ask questions (when applicable), until the conversation is terminated.

D. Terminates Interactions

1. Terminates cooperative play activity
   (a) When S is participating in a play interaction, and *T* gives a verbal cue to terminate the activity ("Play time is over"), S will finish his turn (if applicable) and terminate the activity by
   —gathering materials and/or placing them in their containers.
   —returning collected materials to the appropriate storage place.
   —returning the materials to the storage place and cleaning the area (wiping surfaces).
   (b) When S is participating in a play interaction and hears a signal that the session is over, (bell, timer), S will finish his turn (if applicable) and terminate the activity by
   —gathering materials and/or placing them in their containers.
   —returning collected materials to the appropriate storage place.
   —returning the materials to the storage place and cleaning the area (wiping surfaces).
   (c) When S is participating in a play interaction and the task is completed, before S engages in another activity, S will terminate the ongoing activity by
   —cleaning up.
   —saying/signing termination of activity with one word and cleaning up.
   —saying/signing termination of activity with two or more words and cleaning up.
   (d) When S is participating in a play interaction and another player suggests termination (says/signs "let's stop"), S will agree or disagree by
   —nodding/shaking head.
   —N/A
   —Signing/saying "Yes" or "No."
   and S will continue or terminate the interaction accordingly.
   (e) When S is participating in a play interaction and suggests termination (says/signs "let's stop"), when the other player agrees or disagrees, S will continue or terminate the interaction accordingly.
2. Terminates conversation
   (a) When S is participating in a conversation and *T* directs S to engage in another activity ("Go to lunch," "Time to work"), S will terminate the interaction by saying/signing
   —1 word closing.
   —2 word closing.
   —3 or more word closing.
   (b) When S is participating in a conversation and hears a signal that the session is over, S will terminate the interaction by saying/signing
   —1 word closing.
   —2 word closing.
   —3 or more word closing.
   (c) When S is participating in a conversation, before S engages in another activity, S will terminate the interaction by saying/signing
   —1 word closing.
   —2 word closing.
   —3 or more word closing.

II. SOCIAL ACCEPTABILITY TRAINING

Rationale

Educational services for severely handicapped individuals, when offered at all, have traditionally been provided in a segregated setting, either in a private school, an institution, or a self-contained class or special school within the public school system. Professional interest in providing a normal environment for severely handicapped individuals has been reinforced recently by legislation which emphasizes the right of the handicapped person to be educated in the least restrictive environment. Severely handicapped students will now commonly attend public schools and thus have increasing contact with nonhandicapped peers over the course of a school day.

One factor crucial to the acceptance of the severely handicapped student in the regular public school situation is the ability of the student to interact appropriately in the social environment of the schools s/he attends. The extent to which a student's social behaviors deviate from or conform to the norm is likely to affect that student's acceptance/rejection by both teachers and nonhandicapped peers. Thus, in addition to programming for the academic needs of the severely handicapped student, it is equally important to attend to the assessment and development of social skills.

The purpose of this section of the task force is twofold: (1) to provide a framework for identifying and assessing social interaction skills which will enhance

acceptance of the handicapped in the regular school environment, and (2) to provide a model procedure for direct instruction of such social interaction skills. Social interaction encompasses a broad and complex range of behaviors. It is beyond the scope of this task force to address all aspects of social interaction. The skills and objectives delineated here emphasize but one aspect of social interactions: social acceptability in terms of the physical and verbal projection of an individual. The skill areas contained herein represent socially acceptable norms of behavior and appearance.

Often it is a first impression that can set a handicapped student apart as a target for ridicule or rejection. The training objectives delineated here are intended to pinpoint skills whose mastery will prevent the severely handicapped student from appearing deviant through social ineptitude.

Social behaviors listed in this sequence include both those behaviors which a teacher would want to shape or develop and those which s/he would want to eliminate. For example, most of the conversation skills involve skill development while other social skill objectives deal with the elimination of such socially unacceptable acts as nose picking.

Organization

A. Skill areas

The training sequence has two major divisions: (1) skills involving the *physical projection* of the individual, and (2) skills involving *verbal projection*. *Physical projection* refers to those skills which deal with appearance, bodily movement, body proximity, and interactions with objects in the environment. Objectives related to physical appearance are generally skills that would be trained in a self-care program. They are listed as part of a social skills curriculum in order to emphasize that, regardless of other social skills, physical appearance can hinder successful social interaction. Like appearance, a lack of awareness of acceptable social distance, e.g., sitting too close to someone while engaging in conversation, can prevent or disrupt successful social interaction. Behaviors under the heading body movements are not central to social interactions, but certainly may support or inhibit normalized social contacts. *Verbal projection* skills include those skills necessary for initiating, receiving, sustaining and terminating conversation with either adults or peers.

B. Objectives

Each skill area is divided into skills and objectives for training. All of the objectives selected for the skill program can be directly observed and measured. The training objectives can be described in terms of:

1. *What* they intend to teach:
   a. the *concepts* required of interaction (name recognition, object use).
   b. the *operations* involved in interactions (eye contact, waving).
2. Participants in the interactions (viz. those *with whom* the student interact):
   a. the trainer.
   b. an adult other than the trainer.
   c. a peer.
3. *Where* the interaction might normally be expected to occur (e.g., on the bus enroute to school, in the lunchroom, in the classroom).

A sample program incorporating several social acceptability objectives is included in Appendix B.

C. Limitations

The authors recognize that factors such as self-concept, affect, or the appropriate expression of emotion, are important components of appropriate and acceptable social behavior; however, it is beyond the scope of this program to deal with those factors in a systematic manner.

Review of Literature

Social acceptance studies. Among the variables thought to influence social acceptance, those most likely to directly affect the status of the severely handicapped child are: intelligence (Bonney, 1944, Grossman & Wrighter, 1948; Bonney & Powell, 1953; Laughlin, 1954; Brown, 1955, Richards, 1967; Gallagher & Crowder, 1957; Dentler & Mackler, 1962), academic achievement (Laughlin, 1954; Bonney, 1943; Brown, 1955; Richards, 1967; Sears, 1963; Buswell, 1953; Davis, 1957; Porterfield & Schlicting, 1961, Hudgens, 1962; Muma, 1963; Stevens, 1971), and communication skills (Gottman, 1974; Rubin, 1972).

Other variables reported to influence social acceptance are obviously neither exclusively nor inherently related to handicapping conditions. Among these variables are such child characteristics as physical attractiveness (Bonney, 1943; Kihler & Lee, 1943; Hunt & Solomon, 1943; Young & Cooper, 1944; Richardson, Goodman, Hastorf & Dornbush, 1961; Dion & Berscheid, 1974), the kind and style of clothes (Williams & Eicher, 1966), names (McDavid & Harari, 1966), socioeconomic status (Brown, 1956; Mayer, 1967), eye-hand coordination (Commoss, 1962), motor proficiency (Hofmeister, 1969), accident proneness (Fuller & Baune, 1951), and athletic ability (McGraw & Tolbert, 1953).

Interpersonal behavioral variables reported to affect social acceptance are individual traits which again may or may not be associated with handicapping conditions and most certainly may be found in any child. Such traits include disruptive behavior (Johnson, 1959; Johnson & Kirk, 1950; Baldwin, 1958; Gottlieb, 1973), aggressiveness (Hartup, Glazer, & Charlesworth, 1967; Lesser, 1959), neuroticism (Thorpe, 1955), sincerity (Brown, 1955), enthusiasm (Guinouard & Rychlak, 1962), defensiveness (Wallach, Green, & Lippsitt, 1962), sex-role behavior (Tuddenhaum, 1951), concern with social approval and responsiveness to social norms (Harvey & Rutherford, 1950; Copper, 1964; Guinouard & Rychlak, 1962), anxiety (Rubenfeld & Staifor, 1963; Pill, 1963; Horowitz, 1962), friendly approaches

(Hartup, Charlesworth, & Glazer, 1966), and rate and frequency at which one issues reinforcement to others (Hartup, Charlesworth & Glazer, 1967).

These studies do not present reliable or conclusive data concerning the social acceptability of severely handicapped students. The variables generally focus on vaguely defined and unmeasurable behaviors which do not provide a basis for social skill training.

Studies with severely handicapped individuals. Several studies with severely handicapped individuals have demonstrated that social interaction skills can be taught by systematically changing the environment (Lovaas, Schaeffer, & Simmons, 1965; Milby, 1970; O'Connor, 1969; Quitlitch & Risley, 1973; Wahler, 1967; Buell, Stoddard, Harris, & Baer, 1968; Ellis, 1973).

With two exceptions, however, there are no documented procedures available for teaching severely handicapped students the high-level social interaction skills required to function in the rather complex social environment of the public school.

Williams et al. (1975) provide a program for teaching cooperative play interactions to severely handicapped students. While the program does provide an appropriate model for a social skills curriculum, it does not extend to the multitude of diverse social skills the student would need over the course of a regular school day.

Part I of this task force provides a skill sequence for training social interaction for severely handicapped students in a residential facility. While it provides a broad-based description of social interaction skills and an effective organizational model, once again skill performance does not progress to a level that will be functional in the regular school environment.

Available instructional programs. Instructional programs containing designated "social skill" components such as Developing Understanding of Self and Others (Dinkmeyer, 1973; Bessell, 1972; Goldstein, 1974) generally have not been developed for use with severely handicapped populations and have not demonstrated effectiveness in bringing about significant behavioral changes with severely handicapped learners. In addition, such commercial social skills packages typically fail to meet the basic requirements of instructional programs for the severely handicapped as delineated by Williams, Brown, and Certo (1975). According to these authors, instructional programs and materials should be justified on the basis of their functional use to the student, should teach or verify skills in the natural environment rather than only in contrived or simulated educational settings, should provide for the generalized performance of the target skill across a variety of persons, places, materials, and language cues, and should focus on eventual student-initiated or student-regulated performance. Most commercial programs rely heavily on contrived tasks and artificial training settings, do not program for generalization to the "real world," and develop teacher-directed rather than student-initiated repertoires.

Functional Training of Skills Promoting Social Acceptability

It is the position of the authors that social skill training should not take place in isolation. While it is probably justifiable (and "normal") that specific periods be designated for working on isolated academic skills (e.g., reading, math and physical education periods), the rationale for an isolated period devoted to social skill training is less compelling. Social skills are an integral part of academic and transition activities throughout a students *entire* day; it therefore seems more appropriate to consider social skill training opportunities as they occur in the normal flow of school events. Training of the skills promoting social acceptability and normalized peer and adult interactions should take place in the natural context and should focus on clusters of skills rather than isolated, splinter skills in order to maximize overall social development. This integrated approach to the teaching of social skills is advocated both because of the fluid, non-segmented nature of social interactions, and because of the need to insure the generalization of social skills across a wide range of people, locations, and activities.

Identifying student needs. The task of the teacher is to determine the learner's daily schedule as it is likely to occur in the regular school environment. From that schedule, the social skills/behaviors involved in each setting can be identified in the listing of behavioral objectives by the code letter representing particular settings.

B — Bus
BA — Bathroom
C-S — Classroom-Structured
C-U — Classroom-Unstructured
G — Gym
Li — Library
L — Lunchroom
P — Passageways
Pl — Playground

For example, beside the objective IB_1, the letters G and Pl appear. This indicates that that particular behavior might appropriately occur in at least several settings: The gym and the playground. Rather than train or shape social skills/behaviors in isolation during a particular period each day, the educational programmer is thus encouraged to attend to the training and development of these important social behaviors throughout the school day in *all* of the relevant settings in which the behavior might occur.

Once objectives for a student have been identified, the individual's current performance will be assessed and the programmer/teacher must decide upon an appropriate intervention to either eliminate or shape the particular behavior.

A sample training program for one objective is provided in Appendix B.

Establishing Performance Criteria

A. **Levels of performance**. In instances where more than one performance would (functionally) meet the requirements of the social interaction, then several

alternatives are noted. The alternatives include a minimal, acceptable (probably adapted or prosthetized) response and a more normalized, sophisticated form of responding. Where such options are identified, they might appear as follows with the behavior listed on the left being the less sophisticated form of responding and that on the right the more sophisticated form:

When a peer or adult says or signs a greeting to S*, S will return the greeting by

—waving

—saying/signing "hi"

B. **Criteria for performance.** The trainer must establish the criterion for moving from one step in the sequence to the next. The criterion for mastery should insure that the student can perform the task across settings, cues, trainers, and materials.

C. **Determining a situationally acceptable rate.** The task should be performed at a rate that allows for completion within an acceptable period of time as judged by the trainer.

D. **Designing an instrument for data collection.** The teacher must have direct measures of the student's performance so that s/he is able to verify that the skill has been learned.

E. **Selection of objectives and assessment.** Individual student's social behavior repertoires will vary as greatly as do academic skills. In using the present listing of behavioral objectives, a teacher/programmer would select those behaviors from any or all areas listed that most directly address the problems the student is encountering in a given situation. After the behavior/skill objectives have been identified, the teacher must then assess the student's current performance level using a task analysis of program objectives or by verifying the occurrence/non-occurrence of the behavior in question using a variety of cues, materials, and recipients of the interaction.

Modifications for Individual Learners

A teacher who wishes to utilize this sequence for training social interactions may have to modify some objectives to make them suitable for his/her students. Necessary adaptations might include:

A. **Selecting age appropriate tasks.** The tasks identified in this sequence are appropriate for use with children. Adults receiving social skill training should be presented with tasks appropriate to their age level. For example, it may be natural for a group of children to move in a line formation but adults seldom do so.

B. **Allowance for disabilities.** Some objectives, especially those which are prohibitive for students in wheelchairs or with limited use of their limbs. Such objectives would have to modify the response requirement or include training with a prosthetic device.

C. **Modification of response directions and requests.** If the student's response is communicated with sign language, the teacher should give the response directions and request by signing while he speaks.

D. **Provisions for performance across settings.** It is the teacher's responsibility to provide opportunities for the student to perform a newly acquired skill across a variety of settings in the student's environment. For instance, if a student has been taught in the classroom to return a greeting, he should be required to do so in the lunchroom, hallway, on the playground, etc.

E. **Selection of functional objects for task materials.** Though many of the objectives provide examples of possible task materials, the teacher should take care to select objects which are available in the student's environment and which the student has used or can learn to use functionally.

SKILL SEQUENCE OBJECTIVES

Physical Projection: Appearance

Physical appearance is an essential component of social acceptability. Its appropriateness, how attractive and normal a person looks, directly influences the way a student is perceived by his/her peers and teachers and how they react to him/her. Establishing behaviors that produce a pleasant physical appearance is particularly important for severely handicapped students who are being integrated into public schools with nonhandicapped students because being socially acceptable will depend on looking as well as acting "normal." For some severely handicapped students, certain aspects of their appearance are fixed, as in the case of a physical deformity, but it is nonetheless important to attend to those aspects of physical appearance that can be controlled.

The definition of "normal" physical appearance depends on both the standards of the local community and the age of the student, and will thus vary from school to school. Since in many cases severely handicapped students will have limited control over the factors that influence their appearance (e.g., torn clothing), parents and teachers must play an active role in promoting socially acceptable appearance. Thus, in addition to serving as training targets, the objectives delineated below will serve to prompt parents and caretakers to maximize the social acceptability of their children.

I. PHYSICAL PROJECTION

A. Physical Appearance Objectives

Ba, B, C-U, C-S, G, Li, L, P, Pl

1. Multiple settings

a. Grooming — self

—(1) S's hair will be clean.

* Throughout description, *S* refers to student, *T* to teacher/aide.

Bathroom — Ba
Bus — B
Classroom (Unstructured) — C-U
Classroom (Structured) — C-S
Gym — G
Library — Li
Lunchroom — L
Passageways — P
Playground — Pl

(2) S's hair will be combed into an appropriate style of the times.
(3) S will show no visible signs of dirt, including food particles, on any exposed part of his/her body.
(4) S's eyes will be clear (show no visible mucous in the corners).
(5) S's nose will be clean (no watery fluid dripping from the nostrils or smeared between nostrils and lips).
(6) S will have a neutral or pleasant body odor.
(7) S will have clean teeth and mouth (there will be no visible food particles caught between the teeth or dried on the lips).
(8) S will not drool.
(9) S's fingernails will be groomed.
(10) S's ears will be clean (no waxy build up or dirt visible).

b. Grooming — clothes
(1) S will wear clothes that are appropriately styled to the times and season.
(2) S's clothes will be clean.
(3) S's clothes will be relatively free of wrinkles.
(4) S's clothes will not be frayed, torn, or have loose buttons or hems.
(5) Zippers on S's clothes will be securely interlocked.
(6) S's socks will be pulled up.
(7) S will remove only outerwear (e.g., jackets) when inside the school building.
(8) S will wear appropriate shoes (e.g., gym shoes with gym clothes).
(9) S's shoes will be properly laced.

c. Facial expression
(1) S will keep mouth closed except when conversing or showing emotion such as amazement.
(2) S will smile when appropriate.
(3) S will refrain from pouting.
(4) S will not stare at people.
(5) S will not stare at an object or stare into space for any extended length of time.
(6) S will show displeasure by frowning if appropriate to the occasion.
(7) S will not grimace at other peers/adults (e.g., stick out tongue).

d. Posture
(1) When physically capable, S will stand with legs, trunk, head in alignment.
(2) When physically capable, S will walk smoothly at a reasonable speed with legs, trunk, head in alignment.
(3) When not carrying something, holding hands in pockets, or folding hands in front of body, S will walk with arms at side and fingers extended.
(4) When physically capable and S is wearing pants, S will sit in chair with feet on ground, back straight, with arms on lap or table.
(5) When S is physically capable and S is wearing a dress, S will sit in a chair with feet on the ground, knees together, back straight, arms on lap or table, and dress pulled down to cover underwear.

2. Specific settings

a. Lunchroom
(1) S will wash hands before eating.
(2) S will use napkins during the meal to wipe any food particles off mouth area.
(3) S will close mouth while chewing food.
(4) S will chew/drink food quietly.
(5) S will not talk while chewing food.
(6) S will keep all food in mouth while chewing.
(7) S will not drool while eating.
(8) S will use a napkin if it is necessary to wipe hands after eating.
(9) S will wash hands after eating if hands are sticky or have food on them.
(10) If necessary, S will remove any food particles from hair after eating.
(11) If S spills food/drink on his clothes, S will wipe it off or seek help.

Ba

b. Bathroom
(1) S will properly use toilet paper to wipe with after a bowel movement.
(2) S will wash hands after using the toilet.
(3) S will adjust clothes appropriately after using the toilet.
(4) S will zip/button pants after using the toilet.
(5) S will buckle belt after using the toilet.
(6) If necessary, S will properly adjust sanitary napkins.
(7) If necessary and possible, S will clean soil marks from clothes which have resulted from body excretions.

P

c. Playground
(1) If necessary, S will put on outerwear to go out to the playground.
(2) If dirty, S will wash hands/face after playing on the playground.
(3) If S gets an excessive amount of dirt on clothes (e.g., falls in the mud), S will wash it off or ask for help.
(4) If S is a female and wearing a dress, S will keep her dress down when using playground equipment or refrain from using the equipment.

G

d. Gym
(1) If appropriate, S will change from school clothes to gym clothes before gym class.
(2) If S has been subject to physical exertion and it is possible, S will shower after gym class.

(3) When S has been subject to physical exertion, S will wash hands and face after gym class.
(4) When S has been subject to physical exertion S will wash underarms and apply a deodorant after gym class.
(5) If appropriate, S will change from gym clothes to school clothes after gym class.
(6) S will comb/brush hair after gym class.

Physical Projection: Movement

Physical projection of non-functional, inappropriate, or excessive movement will set an individual apart from others in the social environment. Most movement objectives deal with behaviors that a teacher would want to eliminate from the student's behavioral repertoire.

In the case of a student with a physical handicap, it may be necessary to modify many of the objectives relating to social aspects of movement. As an obvious example, a person who walks with difficulty might not be expected to climb and descend stairs.

I. PHYSICAL PROJECTION

B. Movement Objectives

Ba, B, C-S, C-U, G, Li, L, P, Pl

1. Multiple settings
   a. S will refrain from self-stimulatory movements involving excessive and purposeless movements of the hands and arms.
   b. S will refrain from playing with or handling his/her genitalia.
   c. S will refrain from picking his/her nose.
   d. S will refrain from self-injurious behavior such as head banging or self-imposed blows to the head or face.

G, Pl

   e. S will refrain from engaging in dangerous or reckless activities such as climbing to or jumping from high places.

Ba, B, C-S, C-U, Li, L, P, Pl

   f. S will refrain from handling any part of another's body excluding hand holding.
   g. S will refrain from making contact with another's body in an aggressive manner (e.g., hitting or kicking).
   h. When a peer physically aggresses toward S, S will refrain from hitting or kicking back and move away from the peer.
   i. When S makes a physically aggressive move toward a peer or adult, S will make restitution for the act by apologizing to the victim.
   j. S will refrain from stealing property of others.
   k. S will refrain from handling property of others without permission.

B, Ba, C-S, G, L, P, Pl

   l. S will stand in line to wait his/her turn without undue or excessive movement.

B, C-S, C-U, Li, L

   m. When seated, S will refrain from excessive movement of feet and legs under his/her desk or chair.

2. Specific settings
   a. Passageways

P

   (1) S will refrain from running and will walk at moderate speed through hallways.
   (2) S will climb and descend stairs on right hand side of stairway.
   (3) S will refrain from running on stairway.
   (4) S will refrain from hanging over stairs or handrails.
   (5) S will refrain from sliding down handrails.
   (6) S will refrain from running during fire drills.
   (7) When riding an elevator, S will push appropriate buttons only.
   (8) When riding an elevator, S will refrain from excessive movement inside the elevator.

   b. Bus

B

   (1) S will remain seated in bus and will refrain from excessive movement of feet or body.
   (2) S will not hang out bus windows.
   (3) S will board and leave the bus at a moderate pace.
   (4) S will move from vicinity of the bus immediately after disembarking.

   c. Playground

Pl

   (1) S will remain within playground boundaries and away from the street during recess periods.
   (2) S will not walk or run through games being played by his/her peers.
   (3) S will refrain from dangerous climbing or jumping from high places.

Physical Projection: Proximity

In addition to appearance and movement, physical projection involves an awareness of proximity to other persons in a setting. Objectives developed for proximity related to the establishment of behaviors to maintain socially acceptable distances between people in a variety of school settings and activities.

The goals are to train the student to discriminate when it is acceptable and unacceptable to make body contact, how close to stand or sit by a person without making that person feel uncomfortable, and how to handle problems that may arise related to physical proximity. In considering these behaviors, it is important to consider age differences. For example, closeness to and physical contact with peers of the opposite sex is more accepted among kindergarten children than it is among fourth graders. Similarly, in high school, school personnel typically frown upon physical proximity when it involves touching or fondling. Thus age and school norms should be considered when including these behaviors in an individual's program.

I. PHYSICAL PROJECTION

C. Proximity Objectives

1. Multiple settings

a. Standing

L, C-U, G, Pl, Li, P, Ba, B

(1) When S is engaged in conversation, S will stand close enough to hear and be heard using normal conversational tones, yet will maintain a minimum distance of arm's-length from any person.

C-U, C-S, Pl, G

(2) When S is in role of onlooker observing an event, S will stand close enough to the activity to be within seeing distance, yet maintain a minimum distance from other onlookers that will preclude body contact. S will furthermore not take a standing position in front of another person that will block that person's view.

C-U, C-S, Pl, G

(3) When S's view of an activity is blocked by another person who moves in front of S, S will move to another position or will politely inform that person that s/he is blocking his/her view and will ask him/her to move.

L, C-U, C-S, PL, G, Li, P, Ba, B

(4) When S is in motion, S will maintain a minimum distance of an arm's-length from any other persons in the setting and will be cautious to avoid body contact with stationary people/objects in the path of motion.

L, C-U, C-S, PL, G, Li, Ba, B

(5) When S is standing and is waiting for a turn or for further directions, S will maintain a distance from other people in the setting which will preclude body contact.

(6) When S is standing and someone else moves into contact, S will reposition self to break contact.

b. Sitting on chairs

L, C-U, C-S, Li, B

(1) When S is looking for a chair, S will *not* attempt to sit on a chair occupied by someone else.

L, C-U, C-S, Li

(2) When S is seating self, S will position body in the middle of the unoccupied chair so that the chair can support body weight without tipping over.

L, C-U, C-S, Li, B

(3) When S is seated, S will keep feet in a position directly in front of own chair and will not touch chair of person directly in front.

(4) When S is seated, S will keep arms, hands, legs, and feet in a position to avoid body contact with persons in front, behind, or beside self. S will keep feet out of aisles.

L, C-U, C-S, Li

(5) When S is required to procure a chair (an unoccupied chair is unavailable), S will place chair in such a position as to:

(a) permit viewing of the activity, yet not block others' view (when applicable);

(b) conform to a linear or circular formation as indicated;

(c) touch next chair unless otherwise directed.

L, C-U, C-S, Li, B

(6) When S has selected a chair which someone else subsequently occupies, S will:

(a) politely inform occupant of "ownership" and ask him/her to find another seat;

(b) if occupant refuses, find another unoccupied chair and seat him/herself or seek mediation by a person in authority.

L, C-U, C-S, Li

(7) When S is seated in a chair at a table, S will keep materials (books, papers, lunch tray, game pieces, etc.) directly in front of self and will keep arms, hands when placed on table within 1 foot on either side of body and avoid touching persons nearby.

c. Sitting on the floor (or ground)

C-U, C-S, PL, G, Li

(1) When S is seating self, S will sit in any position (on buttocks with legs in front, legs crossed, hunched on feet with knees bent, or with knees bent sitting on legs and feet) provided S avoids body contact with others sitting nearby.

(2) When S is sitting, S will keep arms and hands near own body and avoid touching those nearby.

(3) When S "bumps" or touches someone else S will apologize and re-adjust position to prevent body contact.

d. Sitting on a bench (or bus seat)

L, Pl, G, B

(1) When there is room, S will seat self in such a position as to avoid body contact with others seated on the bench.

(2) When it is necessary to make room for another person to be seated, S will move as close as possible to the person seated beside him/her, possibly making body contact.

(3) When other persons seated on the bench complain that S's additional presence has caused too much crowding, S will find a place at another bench.

e. In line

L, C-S, PL, G, Li, P, Ba, B

(1) When S takes a place in line, S will not push, bump into, or make other body contact with others getting into line.

(2) When S joins a line, S will take a position at the end of the line and maintain a minimum distance of 1 foot from the person immediately in front of him/her.

(3) When S allows another person to step into the line in front of him/her, S will step back *without* touching person behind him/her.

(4) When line is either in motion or stationary, S will maintain a minimum distance of one foot and a maximum distance of two feet between self and person immediately in front of him/her.

(5) When S bumps into person in front, S will apologize and readjust position.

(6) When person behind S bumps into him/her, S will accept apology if one is offered. When no apology is offered, S will ignore instance on first occasion; on second occasion, S will turn and politely ask person to be more careful or will drop out of line and take a position at end of line.

2. Specific settings

None

Physical Projection: Interactions With Objects

As severely handicapped students are integrated with their nonhandicapped peers in school, they will function in physical environments that may be similar to segregated settings. In this new school setting, however, behavioral expectations are likely to be higher. Inappropriate interaction with objects in the environment is likely to interfere with social acceptance.

Behaviors identified in this section are divided according to types of objects commonly found in the school environment: permanent room fixtures, furniture, educational materials, and toys/games/objects. Objectives in this section deal with how these objects should be manipulated, when it is most appropriate to interact with them, and where they will be encountered. The teacher will find it necessary to consider normal age level expectations when planning for individual students.

I. PHYSICAL PROJECTION

D. Objectives Relating to Interactions with Objects

1. Multiple settings

a. Permanent room fixtures

Ba, C-S, C-U, G, Li, L, P

(1) S will turn on a light switch when entering a dark room or upon teacher's request.

(2) S will turn off lights in a room if s/he is the last to leave, or upon teacher's request.

Li, P, G

(3) S will not touch a fire extinguisher unless directed by the teacher.

L, G, P

(4) S will not pull fire alarm without adult direction.

Ba, C-S, C-U, G, Li, L, P

(5) S will not adjust the thermostat.

(6) S will only insert plugs into electrical outlets.

Ba, B, C-S, C-U, G, Li, L, P

(7) S will not insert body parts or objects in heating or air conditioning vents.

Ba, C-S, C-U, G, Li, L, P

(8) S will not touch radiator.

(9) Unless requested by an adult, S will not remove items from bulletin boards or walls.

Ba, C-S, C-U

(10) S will not sit on sink.

(11) Given a task requiring water, S will close drain if necessary, turn on cold water to moderate stream, then not to adjust temperature, turning off water and opening drain when finished.

(12) S will not splash water outside of sink.

(13) When washing hands, S will do so over the sink using and replacing soap in the proper location.

Ba, C-S, C-U

(14) After using the sink, S will rinse out remaining residue from the basin.

(15) When drying hands, S will tear off, pick up or pull out no more than two paper towels and deposit them in trash when finished.

(16) S will not splash water on or write on mirrors.

C-S, C-U

(17) S will write, draw or mark on blackboard only with chalk only when given teacher permission.

C-S, C-U, Li

(18) S will open and close cabinet doors appropriately.

(19) When using pencil sharpener with teacher permission, S will place lead end of pencil in hole and turn handle for about 1 second, take pencil out, see if it is sharp. If not S will repeat procedure until it is.

(20) Upon teacher request, S will take cover off pencil sharpener, carry it upright without spilling shavings, deposit in trash, return and replace cover on sharpener.

Ba, B, C-S, C-U, Li, L, G, P

(21) S will open or close windows with teacher permission.

B, C-S, C-U, Ba, L, G, P, Pl, Li

(22) S will not place hands on glass of windows.

(23) S will not throw objects (sticks, balls, etc.) at windows.

C-S, C-U, G, P, Pl

(24) When getting a drink at the water fountain, S will drink water at a moderate rate and will not touch spout with mouth.

b. Furniture

C-S, C-U, Li, L

(1) S will keep all legs of table/desk on floor.

C-S, C-U,

(2) Given a desk with a lid, S will open when appropriate and not allow the desk to bang shut.

C-S, C-U, Li, L

(3) S will not sit on table/desk without teacher permission.

C-S, C-U,

(4) After using materials such as prints, glue or clay, S will clean off desk/table with available cleaning materials, if necessary.

C-S, C-U, Li, L

(5) S will not make marks on desk/table.

C-S, C-U, Li, Ba, P, Pl, L

(6) S will deposit waste materials inside the trash can by dropping it from hand directly over the trash can.

(7) S will leave trash can in place in upright position unless given permission by the teacher to move it.

Ba, C-S, C-U, Li, L, Pa, Pl

(8) S will not climb into trash cans.

(9) S will not deposit liquid wastes in trash cans.

(10) If necessary, S will with teacher permission, pick up trash can by sides in upright position, take to desk/table and with sweeping motion of the arm, direct waste materials into can.

C-S, C-U, Li, L

(11) If requested by the teacher to take the trash can to others in the room, S will pick it up by the sides in an upright position, hold for another to deposit waste materials, move to the next person, repeat process until all students with trash have deposited it into can.

(12) S will sit in a chair upright with buttocks on seat and feet on floor directly in front of S.

(13) S will pull chair approximately one foot from under table/desk to sit in it.

(14) S will push chair closer to table/desk while sitting in it.

(15) S will push chair away from table/desk while sitting in it when getting ready to move from table/desk.

(16) S will push chair to table while standing to clear the aisle.

C-U, Li

(17) S will use pillows only to sit on, lie on, or lean against.

c. Educational materials

C-S

(1) S will write in workbooks as designated by teacher.

C-S, C-U, Li

(2) S will not mark in, fold pages, or tear pages from a book.

(3) S's hands will be clean when using books.

(4) When finished with a book S will put it in the proper place.

(5) If S needs to mark a stopping place in a book, S will place a marker between those pages.

(6) S will not place objects other than school papers or markers in books.

C-S, C-U, Li, P

(7) S will not try to carry more books than he can hold.

C-S, C-U, Li

(8) S will hold open a book with one hand grasping each side or by laying it on the desk/table.

(9) S will use pencils/pens/markers to write, mark on, draw on paper for a specified task.

(10) S will use the eraser end of the pencil to remove unwanted pencil marks.

C-S

(11) S will not tear paper unless directed by teacher.

C-S, C-U, Li

(12) S will not place educational materials in mouth.

(13) S will pick up pencils/crayons/papers that are found on the floor and return to appropriate places.

(14) S will use scissors only for specified purposes.

C-S, C-U

(15) When S gets or replaces scissors, S will hold pointed ends of scissors down when walking to designated place.

(16) S will hand scissors to others by extending handles outward and pointed ends inward.

(17) S will use thumbtacks only for specified purposes.

(18) S will use stapler only for specified purposes.

(19) S will use ruler only for specified purposes.

C-S, C-U, Li

(20) S will use record player with teacher permission, if it is required, by selecting a record, placing it on the player, placing arm on edge of record, turning it on and adjusting the volume.

(21) When record is finished, S will turn off player and replace record in cover.

(22) When given teacher permission S will insert tape into cassette recorder, turn on, adjust volume. When tape is finished, S will rewind, remove tape and put it away.

(23) S will not use other audio-visual equipment such as movie projectors unless trained and directed to do so.

C-S, C-U

(24) S will use the eraser in a sweeping motion across the chalk board when necessary to erase the board.

(25) After using chalk and/or erasers, S will replace them on the chalk ledge.

C-S, C-U

(26) S will keep personal books, papers, and other belongings not in use inside desk, locker, or assigned area.

C-S, C-U, Li

(27) S will have on top of desk/table only those materials required for the task.

d. Toys/games/objects

C-U, Pl

(1) When S is presented with an object with movable parts S will appropriately manipulate the movable parts to make an observable change in the object.

C-U, Pl, G

(2) When S is presented with a toy that can be appropriately manipulated by pushing, S will push the object.

(3) When presented with a toy that can be manipulated by pulling, S will appropriately pull the object.

(4) When presented with an object that can be appropriately manipulated by shaking, S will appropriately shake the object.

(5) When presented with objects that can be appropriately used by hitting, S will appropriately hit the object.

(6) When presented with an object with removable parts, S will disassemble and reassemble the object appropriately.

(7) When S is participating in a play interaction with objects, S will remain in a situation appropriate proximity to the other player(s) until the interaction is terminated.

(8) When S is awaiting his turn while participating in a play interaction with toys/games/objects, S will attend to the other players as they take their turns by watching other player's movements for the duration of his turn.

(9) When S is participating in a play interaction, S will use the materials with those previously trained manipulative skills necessary for the game for the duration of the game.

(10) When S is using materials in a play interaction, S will complete his turn at a rate acceptable to the activity and pass the materials to the next player if appropriate.

(11) When a play interaction involving materials is terminated, S will help return materials to designated storage places and clean the play area.

(12) S will keep all toys/games/objects in designated play areas and remain in that area.

C-U, G, Pl

(13) S will not damage toys/games/objects by inappropriate manipulations (breaking off parts, stepping on them, etc.).

(14) S will not interfere with another's toys/games/objects.

C-S, C-U, Ba, L

(15) S will pull one (or additional as needed) tissue of box when needed.

2. Specific settings

a. Bathroom

Ba

(1) When entering the bathroom, S will check to see if stall is empty by looking under the door for feet.

(2) If S enters an unlocked occupied stall, S will say "excuse me" and close the door.

(3) S will open stall door to enter, lock while using toilet, and unlock and open door to leave.

(4) S will eliminate directly in toilet.

(5) Male S will urinate in urinal when available.

(6) If necessary and possible, male S will raise seat on toilet to urinate.

(7) S will keep hands and feet out of toilet.

(8) S will unroll and tear off needed amount of toilet paper, use and deposit in toilet.

(9) When finished, S will flush toilet.

(10) S will report any malfunction of the toilet to the teacher or janitor.

b. Bu

B

(1) S will sit on bus seat with feet flat on floor and sit in an upright position.

(2) When available, S will fasten seat belt when s/he gets on bus, and unfasten it when ready to depart.

(3) S will not destroy the bus seat in any way.

(4) Unless S has driver permission, S will not open or close windows.

(5) S will remain in contact with the bus seat until bus comes to a complete stop and driver gives due to disembark.

(6) S will keep belongings on lap or in a designated area while on the bus.

(7) When leaving the bus, S will take all belongings with him/her.

(8) If S has waste materials, S will hold them until proper waste container is available.
(9) When boarding the bus, S will wait until all unloading passengers are off the steps, then will board the bus.

c. Unstructured Classroom

C-U

(1) When given teacher permission, S will gently handle pet animals in the class.
(2) S will not feed pets without teacher permission.
(3) S will keep hands and foreign objects out of the fish bowl.
(4) On teacher request, S will water plants.
(5) S will not break off pieces of plant or dig in dirt.

d. Lunchroom

L

(1) S will use fingers to eat finger foods.
(2) S will use proper utensils to eat non-finger foods.
(3) When using salt or pepper, S will only use them to season his/her own food.
(4) When not using utensils S will place them to the side of the tray.
(5) S will leave tray/plate in contact with table while eating.
(6) S will use napkin to wipe face and hands.
(7) S will pick up glass/carton only to drink and will replace it on table/tray when finished.
(8) S will not play with food.
(9) S will eat only his/her own food unless otherwise directed by teacher.
(10) When finished eating or on teacher direction S will take tray/trash to clean up area, place waste materials in designated containers and leave tray in specified area.
(11) If buying or receiving lunch in cafeteria, S will hand ticket/correct amount of money to appropriate person, pick up tray, silverware, and beverages and return to designated eating area.
(12) S will remove food from tray only to eat it.
(13) S will tear open condiment packages and only place contents on appropriate foods.
(14) Empty or unused condiment packages should remain on tray during meals.
(15) When S is using bottled condiments, S will open container, place adequate amount on food and close.

e. Passageways

P

(1) When passing through a double doorway with or without doors, S will pass on the right side.
(2) When S needs to go through a single doorway and another person is approaching within two feet of the doorway from the opposite direction, if S is the closest to the doorway, s/he will pass through and step to the right of the doorway for that person to pass through, then s/he will enter.
(3) S will not open a door marked "For Emergency Use Only" unless appropriate.
(4) S will enter doors marked "in" or "enter" and exit doors through doors marked "out" or "exit."
(5) When S is opening a door with glass, S will check by looking through the glass for a person within two feet of the other side of the door, and if needed S will wait for that person to pass by before passing through.
(6) When S opens a nontransparent door, S will do so cautiously as to avoid hitting persons on the other side.
(7) S will open and close doors appropriately (this includes sliding, revolving, push-pull, cabinet, locker doors, doors with crash bars and knobs).
(8) S will exercise caution in opening locker doors so as not to hit someone nearby.
(9) When walking, S will check behind a door that swings shut, for another person within two feet also coming toward the door. If another person is there, S will hold door open and find him/her for that person to "catch."
(10) If S is following another person through a door that swings shut, S will reach ahead to "catch" it.
(11) Given a door with glass, S will not place hands on the glass.

f. Playground

Pl

(1) S will use swing only if others are out of the way.
(2) S will swing in a sitting position, straight forward and backward.
(3) When climbing ladder to slide, S will wait until preceding persons feet are above head level and S will take care not to kick anyone following behind on the ladder.
(4) S will go down slide only after it is clear and no one is in front of it.
(5) S will go down slide on buttocks, feet first.
(6) S will not throw objects that are not meant to be thrown.
(7) S will use bat only to hit ball in appropriate game.
(8) S will not jump off play equipment in such a way as to be injured.
(9) When playing on jungle gym or bars, S will not swing in front of others.
(10) When playing in sand box/pile, S will leave sand in designated area.

(11) S will hold and turn rope at moderate rate for self or another to jump.
(12) S will take turns jumping rope held by others.

Verbal Projection

Verbal projection, the second main component of social acceptability, involves the conversational skills of the student. In the case of severely handicapped students who are deficient in social interaction skills, these conversational skills may often need to be shaped or trained.

Following the analysis of Williams et al. (1975), verbal projection has been divided into four components. In order to participate in an interaction, an individual must be able to: (1) *receive* a (verbal) stimulus and respond in an appropriate manner, (2) *initiate* a conversation by providing a verbal stimulus to another individual in the social environment, (3) *sustain* a conversation by providing both verbal response and additional verbal stimulus, and (4) *terminate* a conversation by discriminating the appropriate point at which to end the interaction.

Examples of less "sophisticated" and more "sophisticated" response levels have been indicated for many of the conversation skill objectives. The teacher should decide which level is appropriate for an individual student by considering the situation in which the skill is to occur as well as the age and handicap of the child.

II. VERBAL PROJECTION

A. *Receiving Objectives*

Ba, B, C-S, C-U, G, Li, L, P, Pl

1. Multiple settings
   a. S will discriminate appropriate time and place for receiving an interaction.
   b. When peer(s) or adult(s) says or signs a greeting to S, S will return the greeting by
      waving
      saying/signing "hi."
   c. When a peer or adult addresses S with a question requesting a yes/no answer, S will respond affirmatively or negatively by
      nodding/shaking head
      saying/signing "yes/no."
   d. When a peer or adult asks an appropriate question that requires a response other than yes/no that S is willing to answer, but is unable to answer, S will appropriately respond by
      gesturing that s/he doesn't know by extending hands, palms up and raising shoulders slightly
      saying/signing "I don't know."
   e. When a peer or adult asks an appropriate question that requires a response other than yes/no that S is willing and able to answer, S will provide the information by signing/saying
      one word reply
      more than one word reply.
   f. When a peer asks an inappropriate question (personal/irrelevant) that S is unwilling to answer, S will respond by
      shaking his/her head no
      signing/saying "I can't (or don't want to) tell you."
   g. When an adult or peer gives an appropriate command (e.g., "Please pick up your tray"), that S is able to carry out, S will respond appropriately.
   h. When a peer gives an inappropriate command (e.g., "hit Billy"), S will respond by
      shaking his head no
      signing/saying "no."
   i. When an adult or peer gives an appropriate command that S is not able to carry out, S will respond by
      gesturing that s/he can't by extending hands, palms up and raising shoulders slightly
      signing/saying "I can't."
   j. When a peer or adult compliments S, S will respond by
      smiling
      signing/saying "thank you."
   k. When a peer calls S a derogatory name, S will turn or walk away from peer.
   l. When an adult or peer makes a comment to S (e.g., "Isn't it a nice day"), S will acknowledge the comment by
      smiling or nodding head in agreement
      signing/saying "I think so too."
   m. When a peer makes an inappropriate comment to S (e.g., "Billy pees his pants") S will turn or walk away from peer or fail to respond.
   n. When a peer or adult gives an appropriate command that S is unwilling to carry out, S will offer a reason or excuse for non-compliance by signing/saying "I'm busy now," for example.
   o. When a peer/adult offers S an object that S would like to have, S will accept the object by
      smiling and reaching for the object
      smiling, signing/saying "thank you" and reaching for object.
   p. When a peer/adult offers S an object that S would not like to have, S will reject the offer by
      smiling and shaking head no
      smiling, signing/saying "No thank you."
   q. S will make eye contact when receiving an interaction for
      a few seconds
      intermittently throughout interaction.

B. *Initiating Objectives*

Ba, B, C-S, C-U, G, Li, L, P, Pl

1. Multiple settings
   a. S will discriminate appropriate time and place for initiating an interaction with peers and adults.
   b. When S approaches a peer or adult and they are within 3 feet of each other, S will greet

peer/adult by
waving and smiling
smiling and signing/saying "hi."

c. Once S's greeting has been reciprocated, S will not repeat greetings to that person unless the time and situation warrant it (e.g. after a period of absence from each other as in greeting the principal upon entering the building in the a.m. and then again if s/he enters the classroom later in the day).

d. When a peer or adult has in possession or is near an object S wants or needs, S will initiate a request for the object by
pointing
signing/saying the request.

e. When an object is not available and S wants or needs the object, S will request the object by signing/saying
object label
"I would like the (label object)."

f. When S needs assistance from a peer or adult, S will request help by signing/saying
"help"
"I need help with ____."

g. When S desires affiliation with a peer or adult S will initiate the request by approaching the person and signing/saying, "Do you want to ____?" (For example: play with this, go to the show tonight, have a piece of gum.)

h. When S desires permission from an adult or peer to engage in a desired activity, S will ask for permission by signing/saying "Can I ____?"

i. S will initiate a conversation by approaching a peer or adult and making a comment that refers to the environment, such as "It's really snowing hard."

j. S will initiate conversation by making a comment that indicates approval, such as "I like your dress."

k. S will initiate a conversation by asking a question, such as "Did you get all that homework done last night?"

l. S will make eye contact when initiating an interaction for
a few seconds
the duration of the initiating remark

m. When S's attempt to initiate an interaction is ignored or not responded to, S will repeat the initiation.

n. When S's initiation is tentatively or indecisively responded to, S will persist within reason.

o. S will not initiate an interaction by interrupting an ongoing conversation.

p. If S needs to interrupt an ongoing conversation he is in urgent need of attention, s/he will do so by
touching the person
saying "excuse me."

C. Sustaining Objectives

1. Multiple settings

a. S will appropriately discriminate time/place for sustaining an interaction with peer or adult.

b. S will sustain a conversation with an adult/peer after it has been initiated and received.

c. S will sustain cooperative play interaction with a peer/adult after it has been initiated and received.

d. S will make eye contact with the person with whom s/he is conversing
at least once
intermittently throughout the conversation.

e. S will sustain an interaction until adequate information has been exchanged or until the other participant(s) fail to respond, or until an external cue (e.g., bell) signals termination of the interaction.

D. Terminating Objectives

Ba, B, C-S, C-U, G, Li, L, P, Pl

1. Multiple settings

a. S will discriminate the appropriate time to terminate an interaction that has been sustained.

b. S will appropriately terminate a cooperative play interaction that has been sustained by signing/saying "It's time to stop now."

c. S will terminate a conversation that has been sustained by signing/saying "It's time to work," for example.

d. S will make eye contact when terminating a conversation.

E. Commentary Objectives

1. Multiple settings

a. S will discriminate the time and place for making a comment that is not intended to be responded to.

b. S will discriminate the appropriate frequency, duration, and volume or commentary remark.

c. S will refrain from making abusive commentary remarks.

III. SUMMARY

The present paper suggests basic considerations in social skill programming for severely handicapped, offers a tentative sequence of instructional pinpoints for the development of basic social skills, and presents a more complex system of training objectives designed to maximize the social acceptability of the severely handicapped in the public schools. However, the social skill objectives delineated are far from constituting a complete social skills curriculum. While data exists documenting the effectiveness of programs for various objectives, appropriate instructional programs (cf. Williams, Brown, & Certo, 1976) have not been developed for each objective in the sequence. A related weakness is that scope and sequence of the basic skills section has not yet been validated. The section devoted to the development of socially ac-

ceptable physical and verbal projects would naturally have to be adapted to individual schools and programs since what is acceptable in one community or school may not be so in another. Once basic social skills or those skills enhancing social acceptability have been mastered, it is imperative that those responses be incorporated as functional parts of daily activities, and be strengthened in increasingly complex social situations.

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V. APPENDICES

APPENDIX A

Sample Instructional Program for Basic Social Skill Training

Terminal Objective (Part V, Section F 5)

"When *T* points to one of S's peers, teachers (or teaching assistants-TA) or family members (in person or in a photograph), and asks S "What is his/her name?" or "Who is that?", S will respond by saying/signing that person's name within 10 seconds with 80% accuracy on a minimum of 10 trials.

Rationale

Though social interaction can take place without the use of names, name recognition is considered an important component of interaction for several reasons:

1. It facilitates the acquisition of cooperative play skills by enabling the student to follow directions such as "Roll the truck to Janet."
2. It gives the student the information needed to seek attention by calling another person by name or to refer to another person by name in greeting or conversation.
3. It allows the student to make a choice in partners by providing the information needed to answer questions such as "Do you want to walk with Jack?" or "Who do you want to play with?"
4. It furthers the development of self-concept by giving the person an "identity" and a basis on which to differentiate himself from other people in his environment.

Composite Learner

This program is intended for application with a learner who is a resident in a facility for the severely handicapped. It is assumed that the learner has sufficient vision to differentiate one person from another. Provisions have been made to adapt the objectives for a learner who is nonverbal. Adaptations of the objectives for a hearing impaired learner would involve the use of signing by the trainer. Adaptations for a learner who has significant motor involvement that inhibits a pointing response might consist of asking yes/no questions to assess receptive labeling of names. It is also assumed that the learner has performed expressive labeling tasks (see Section IV, Objective H) prior to instruction in this program. For learners who have not yet demonstrated expressive labeling skills, training will be restricted to the receptive labeling phase until such a time as expressive labeling becomes a part of S's repertoire.

Materials

One photograph of each of S's parents, siblings, and classmates, data sheet, reinforcer chart numbered 1-10 (free time is earned by the accumulation of ten points).

Prerequisite Skills

1. Sufficient visual acuity for differentiating one person from another.
2. Sufficient motoric ability to point differentially to peers arranged in a small group.

Instructional Arrangement

Labeling peers: S sits beside *T* and opposite peer. As peers are added, a semi-circle is formed.

Labeling teachers: S sits opposite the teacher and teacher's aide.

Labeling photographs of family members: S sits opposite *T* at a table. Photographs are placed on the table in front of S.

Initial Assessment

Recognizes peers by name:

1. *T* sits beside S who is opposite a semi-circle of peers.
2. *T* says "S" and waits 5 seconds or until S establishes eye contact.
3. *T* points to one of the peers, then says "What is his/her name?"
4. *T* waits 10 seconds or until S responds, says "Thank you" and records the response on the data sheets.

5. *T* repeats above procedure, asking for each peer's name once.
6. *T* repeats above procedure until each peer's name has been requested three times.
7. *T* repeats the above procedure using "Who is that?"
8. *T* repeats the above procedure for two consecutive sessions.

Recognizes teachers by name:

1. *T* and teacher's aide (TA) sit opposite S.
2. *T* says "S" and waits 5 seconds or until S establishes eye contact.
3. *T* points to the TA, then says "What is his/her name?"
4. *T* waits 10 seconds or until S responds, says "Thank you," and records response on data sheet.
5. *T* repeats above procedure asking for *T*'s name.
6. *T* repeats above procedure until *T*'s and aide's name have been requested three times.
7. *T* repeats the above procedure using "Who is that?"
8. *T* repeats the above procedure for two consecutive sessions.

Recognizes family member in photograph by name:

1. *T* sits opposite S at a table.
2. *T* presents one photograph of each of S's parents and siblings.
3. *T* says "S" and waits 5 seconds or until S establishes eye contact.
4. *T* points to one photograph and says "What is his/her name?"
5. *T* waits 10 seconds or until S responds, then says "Thank you" and records the response on the data sheet.
6. *T* repeats above procedure asking for each family member's name once.
7. *T* repeats the above procedure until each family member's name has been requested three times.
8. *T* repeats the above procedure using "Who is that?"
9. *T* repeats the above procedures for two consecutive sessions.

Task Analysis

Phase I — Teaching S to receptively label names of peers, teacher and family members.

Step 1. Teach S to receptively label Peer A in response to the cue "Point to (*name*)."

2. Teach S to receptively label Peer A in the presence of Peer B and in response to the cue "Point to _____."
3. Teach S to receptively label Peer B in the presence of Peer A and in response to the cue "Point to _____."
4. Teach S to receptively Peer A and Peer B when both are present in response to the cue "Point to _____." (Randomly alternate trials.)
5. Teach S to receptively label Peer C in the presence of Peers A and B in response to the cue "Point to _____."
6. Teach S to receptively label Peers A, B, and C when all are present in response to the cue "Point to _____."
7. Continue the above procedures until S receptively labels as many classmates or roommates as is desired using Steps 1-6.

Steps 1-8 — Systematically vary cues

8. Teach S to receptively label peers in response to the new cue "Where is (*name*)?"
9. Teach S to receptively label peers in response to the new cue "Show me (*name*)."
10. Teach S to receptively label peers in response to the cues "Where is (*name*)?" and "Show me (*name*)" (randomly alternating trials).
11. Systematically vary the setting (playroom and lunchroom) using the cues "Where is _____?" and "Show me _____."
12. Systematically vary the teachers in varied settings using the cues "Where is _____?" and "Show me _____."
13. Teach S to receptively label *T* in the presence of the TA in response to "Point to _____."
14. Teach S to receptively label TA in the presence of *T* in response to "Point to _____."
15. Teach S to receptively label *T* or TA when both are present in response to "Point to _____" (randomly alternating trials).
16. Systematically vary cues "Where is _____?" and "Show me _____."
17. Systematically vary the setting (play area and lunchroom) using the cues "Where is _____?" and "Show me _____."
18. Systematically vary trainers in varied settings using the cues "Where is _____?" and "Show me _____."
19. Teach S to receptively label photographs of family members by proceeding through steps 1-10.
20. Teach S to receptively label family members when they are present in response to the cues "Where is _____?" and "Show me _____."

Phase II — Teaching S to expressly label peers, teachers, and photographs of family members.

Step 1. After Step 8 receptive labeling has been mastered, teach S to expressly label Peer A in the presence of a small group of peers in response to the cue "Tell me his/her name."

2. Teach S to expressively label Peer B in the presence of a small group of peers in response to the cue "Tell me his/her name."
3. Teach S to expressively label Peers A and B in the presence of a small group of peers in response to the cue "Tell me his/her name" (randomly alternating trials).
4. Teach S to expressively label Peer C in the presence of a small group of peers in response to the cue "Tell me his/her name."
5. Teach S to expressively label Peers A, B and C in the presence of a small group of peers in response to the cue "Tell me his/her name" (randomly alternate trials).
6. Continue the above procedure until S expres-

sively labels all the peers in a small group using Steps 1-5.

7. Systematically vary cues (e.g., "What is his/her name?" "Who is this?").
8. Systematically vary settings (e.g., playroom and lunchroom) using varied cues ("What is his/her name?" "Who is this?").
9. Systematically vary trainers using the varied cues.
10. Teach S to expressively label *T* in the presence of TA in respons · to the cue "What is my name?"
11. Teach S to expressively label TA in the presence of *T* in response to "What is his/her name?"
12. Teach S to expressively label *T* or TA when both are present in response to "Tell me his/her my name."
13. Systematically vary cues — "What is his/her my name?" and "Who is this?"
14. Systematically vary the settings (playroom and lunchroom) using the cues "What is his/her my name?" and "Who is this?"
15. Systematically vary the teacher in varied settings using the cues "What is his/her my name?" and "Who is this?"
16. Teach S to expressively label photographs of family members by proceeding through Steps 1-6.
17. Teach S to expressively label family members when they are present in response to the cues "Where is _____?" and "Show me _____."

Criterion for moving from one step to the next is 80 percent accuracy on a minimum of 10 trials for one day. If the student responds below 50 percent accuracy on three consecutive days, move back one step.

Phase I Teaching Procedure

Task Presentation	S's Behavior	Consequence
1. *T* says, "(*S's name*)."	Within 5 sec., establish eye contact with *T* for a minimum of 2 sec.	Go to Step 2 — intermittently praise S for "Good looking."
	Does not establish eye contact with *T* for 2 sec. or within 5 sec.	"S, look at me." If S establishes eye contact *T* says, "Good looking" and proceeds to Step 2. If S does not establish eye contact, *T* says, "S, look at me" and prompts S to turn face.
2. *T* says, "Point to (*name*)." "Where is ....?" "Show me ....."	Points to person named.	"Right, that is (*name*)." "You get a point." Record response.
	Points to person other than person named.	"No, "S." Watch me. Point to (*name*)." *T* models correct response. "See, that is (*name*). Now you do it. Point to (*name*)." If S responds correctly, *T* says, "Right, that is (*name*)." If S responds incorrectly, *T* says, "No, "S." Point to (*name*)." *T* puts S through pointing to person named. Record response.

Phase II Teaching Procedure

1. *T* says, "(*S's name*)."	Within 5 sec., establish eye contact with *T* for a minimum of 2 sec.	Go to Step 2 — intermittently praise for "Good looking."
	Does not establish eye contact with *T* for 2 sec. or within 5 sec.	"S, look at me." If S establishes eye contact T says, "Good looking" and goes to Step 2. If S does not establish eye contact, *T* says, "S look at me" and prompts S to turn face.
2. *T* points to a person and says, "Tell me his/her name." "Tell me my name." "What is his/her name?" "Who is this?"	Says/signs the name of the person specified.	"Right, that is (*name*). You get a point."
	Says/signs the name of person other than person specified.	"No, S." (pause) "Where is (*person previously named*)." If S points to the person named, *T* says, "Right, that is ..... Tell me his name." If S says/signs the name of the person specified, *T* says, "Right, that is ....." If S doesn't say/sign the name of the person specified, *T* says, "No, S. Tell me his/her name." *T* points to the same person and says, "Say (*name*)." If S does say/sign the person's name, *T* says, "(*name*)." If S does not say/sign the person's name, *T* terminates *S's* turn. Record response.

T repeats above procedure with another S in the group if possible. If not, repeat the above procedure with S for at least 10 trials per session.

APPENDIX B

Sample Instructional Program for Social Acceptability Training

Terminal Objective

When S desires to affiliate with a peer/adult, S will discriminate the appropriate time to initiate the interaction, will approach within arm's length of peer/adult, will sign or verbalize "Do you want to .....?" and will respond appropriately to adult's/peer's answer within ten seconds, with 100% accuracy, two out of three occasions.

Introduction

This instruction program is a combination of two objectives, it includes both conversation and proximity skills. The objectives combined to produce the terminal objective for this program are:

> II. B.1.g. When S desires affiliation with a peer/adult, S will initiate the request by approaching peer/adult and signing/saying "Do you want to .....?"
>
> I.C.1.a.(1). When S is engaged in conversation, S will stand close enough to hear and be heard using normal conversational tones, yet maintain a minimum distance of arm's length from any person.

It is also important to note that the desire to affiliate with another person can occur in various school settings and that the request in each situation differs with the setting and the people involved. Some examples include:

> in the lunchroom to a peer — "Do you want to sit with me?"
>
> in class (unstructured) to a peer — "Do you want to play?"
>
> in class (structured) to a peer — "Do you want to work with me?"
>
> in the library to an adult — "Do you want to look at this book with me?"
>
> in a passageway to a peer — "Do you want to come to my house tonight?"

By training the initiation of an affiliation request in several different settings where there are also different people and with various language cues, generalization will be facilitated.

It is also important to note that the age of the students must be considered when writing the teaching procedure. "Do you want to play?" is an age appropriate request for a six-year-old, but a 16-year-old should be taught to ask, "Do you want to help me build this model?" As the students learn more advanced social skills, their requests will also become more sophisticated. There may be a significant time delay between the request for affiliation and the actual time it is to occur. The bus ride to school may provide an opportunity for the student to make plans for affiliation later in the day (e.g., "Do you want to eat lunch together?").

Rationale

Appropriately seeking affiliation with another peer or an adult is an important component of social acceptance/interaction for several reasons:

1. It increases the possibility that the student will be accepted by his peers and teacher(s).
2. It facilitates the acquisition of cooperative play skills by enabling the student to initiate a play interaction.
3. It facilitates the acquisition of skills whereby the student can exercise control over his environment by displaying a personal preference for:
   a. affiliation with a certain person
   b. time of affiliation
   c. place of affiliation
4. It enables the student to become a reinforcing agent by increasing the number of positive interactions with his peers and teacher(s) and by eliciting reinforcement from his environment.

Prerequisite Skills

1. receptive language
2. expressive language (verbal or sign)
3. imitation skills

Instructional Arrangement

T and S are standing within speaking distance in a variety of school settings (lunchroom, classroom — structured, unstructured, passageways, gym, bus, library, playground).

Initial Assessment

In each setting where the request for affiliation with peer/adult might occur (e.g., gym, lunchroom), *T* will conduct three probes which evaluate the students performance on:

1. discriminating the appropriate time to initiate the interaction
2. approaching within arm's length of peer
3. signing/verbalizing request to affiliate ("Do you want to .....?")
4. responding to peer's/adult's answer

Task Analysis

A. Teaching S to discriminate the appropriate time to initiate an interaction
   1. Teaching S to label his desire to affiliate
   2. Teaching S to determine in a given setting if he has permission to initiate an interaction
   3. Teaching S to identify the peer/adult with whom he wishes to affiliate
   4. Teaching S to decide if chosen peer/adult is engaged in another activity
   5. Teaching S to incorporate information in steps 1-4 to determine if it is the appropriate time to initiate the interaction

B. Teaching S to approach within arm's length of peer/adult

C. Teaching S to sign/ask, "Do you want to (play, sit on the bus with me)?"

D. Teaching S to appropriately respond to peer's/adult's answer

Program Phases

Phase I:

Teacher provides verbal cues as a signal for the desired response of chain of responses (e.g., "Who do you want to play with?").

Phase II:

Teacher fades verbal cues by gradually reducing the amount of information given by the verbal cues (e.g., "What do you have to look for now?" instead of, "Is S playing with someone else now?"). *T* also gradually reduces the number of verbal cues given thereby requiring S to independently perform a successively greater number of steps in the sequence.

Phase III:

S independently performs the chain of responses in sequence. Criterion for Progression Through Phases: S will correctly respond to each step of the sequence within ten seconds with 100% accuracy on two out of three occasions. If S responds incorrectly on ten consecutive occasions, the program will be re-evaluated.

INSTRUCTIONAL PRECEDURES

	Task Presentation	Accuracy of Response Correct (+) or Incorrect (−)	Response Consequence
1.	*T* asks "Do you want to *(play)* with someone?"		YES—go to Step 2 NO—*T* redirects *S* and/or terminates interaction.
2.	*T* asks "Do you have permission to *(play)* now?"	+	YES—"That's right, you do have permission to *(play)*." Go to Step 3
			NO—"That's right, you don't have permission to *(play)* now." *T* redirects *S*.
		−	*T* models the correct response YES—Go to Step 3 NO—*T* redirects *S*.
3.	*T* asks "Who do you want to *(play)* with?"	+	POINTS TO OR NAMES S_2—"O.K." Go to Step 4
		−	DOES NOT POINT TO OR NAME S_2—*T* repeats question 1 or prompts by suggesting a name.
4.	*T* asks "Is *S (playing)* with someone else?"	+	NO—"That's right." Go to Step 5 YES—"That's right." *T* asks *S* to identify another person, repeat question 4.
		−	*T* models correct response NO—R+ imitation, Go to Step 5

INSTRUCTIONAL PROCEDURES (Continued)

	Task Presentation	Accuracy of Response Correct (+) or Incorrect (−)	Response Consequence
			YES—R+ imitation, *T* asks *S* to identify another person; repeat question 4.
5.	*T* asks "Is S_2 *(working)*?"	+	R+ correct response NO—Go to Step 6 YES—*T* asks *S* to identify another person; repeat question 4.
		−	*T* models correct response; R+ imitation NO—Go to Step 6 YES—*T* asks *S* to identify another person; repeat question 4.
6.	*T* asks "Is this the right time to ask S_2 to *(play)*?"	+	R+ correct response YES—Go to Step 7.
		−	*T* models correct response and R+ imitation YES—Go to Step 7.
7.	*T* asks "Where should you go to ask S_2 to *(play)*?"	+	GETS WITHIN ARM'S LENGTH of S_2—R+ correct response; Go to Step 8.
		−	DOESN'T GET WITHIN ARM'S LENGTH OR NO RESPONSE—*T* models correct response and R+ imitation; Go to Step 8.
8.	*T* says "Ask S_2 'Do you want to *(play)*?'"	+	ASKS S_2—R+ correct response; Go to Step 9
		−	DOESN'T ASK OR NO RESPONSE—*T* models correct response and R+ imitation; Go to Step 9.
9.	a. If S_2 accepts invitation	+	S_1 AND S_2 BEGIN (PLAYING)—*T* says "I'm glad you're (playing together!")
		−	S_1 AND S_2 DO NOT BEGIN (PLAYING)—*T* models correct (playing) response; R+ imitation.
	b. If S_2 rejects invitation	+	*S* RESPONDS POSITIVELY (e.g., says "O.K." and seeks another person)—*T* says "That's a good way to answer. It's a good idea to ask S_2 to "play").
		−	*S* RESPONDS NEGATIVELY (e.g., cries, hits S_1)—*T* models correct response; R+ imitation.
	c. If S_2 ignores imitation	+	*S* RESPONDS POSITIVELY (e.g., repeats question and/or seeks another)—*T* reinforces *S*
		−	*S* RESPONDS NEGATIVELY (e.g., cries, hits S_1)—*T* models the correct response; R+ imitation.

DATA SHEET—SEEKING AFFILIATION

NAME: _____

Date: _____

Phase: _____

Trainer: _____

S Responds to:	Class (Unstructured)	Library	Gym
Do you want to ____ with someone?			
Do you have permission to ____ now?			
Who do you want to ____ with?			
Is S ____ with someone else now?			
Is S working?			
Is this the right time to ask S to ___?			
Where should you go to ask S?			
Ask S "Do you want to ____?"			
Acceptance by S			
Rejection by S			
No response by S			
% Correct			

PHASE I

+ = S responds appropriately

- = S does not respond or does so inappropriately

PHASE II

+ = S responds appropriately; no T cue

+ = S responds appropriately; T cue

- = S responds inappropriately or does not respond; no T cue

- = S responds inappropriately or does not respond; T cue

DATA SHEET—SEEKING AFFILIATION PHASE III

Name: _____

Date: _____

Trainer: _____

	Class (Unstructured)	Library	Gym
S initiates when has permission			
S initiates with person who is not involved in another activity			
S stands within arm's length of person			
S asks "Do you want to ____?"			
S responds to:			
A. Acceptance			
B. Rejection			
C. No Response			
% Correct			

+ = S responds correctly

- = S responds incorrectly or does not respond

Calculation: $\%\ \text{correct} = \frac{\#\ \text{correct}_S}{\text{total trials}} \times 100$

III. SERVICES TO SEVERELY HANDICAPPED STUDENTS

B. Ancillary Services

Editors' Comments

Providing appropriate, efficient educational services (e.g., speech, physical therapy) to severely handicapped students requires the maximum cooperation of all school personnel and family members. Program design, implementation, and evaluation must be executed as an integrative effort in order to ensure generalization and maintenance of the skills being taught (Sternat, Messina, Nietupski, Lyon & Brown, 1977). This can be accomplished by providing consistent and continuous service across all programming areas and environments instead of restricting services to specific times per week or to isolated training settings. The articles that follow present both descriptions of integrated ancillary services currently being provided to severely handicapped students and teaching methodologies and curricula suggestions that demand cooperation from all persons involved in educational programming.

In the first article of this section, Stone presents a brief discussion of normal and abnormal development for personnel working with physically handicapped students, and offers positioning suggestions that help to prevent contractures and deformities. Kohl, Fundakowski, Menchetti, and Coleman present a data-based simultaneous communication program designed for nonverbal severely handicapped students. Finally, Creedon describes an ongoing project using a simultaneous communication approach.

For additional information on the techniques of various supporting disciplines and on the integration of supportive services into the classroom the reader is referred to:

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Physical Therapy in the Classroom

CYNTHIA STONE
Texas Woman's University, Denton, Texas

Classroom teachers working with severely involved students have come face to face with the difficulty of educational programming for this population. The advent of numerous curricula with milestones in all areas of development have been useful references for observing the normal sequence of development. However, many children with central nervous system dysfunction such as cerbral palsy are unable to follow the motor development sequence because of severe motoric limitations of abnormal movement patterns, the development of contractures, or more realistically, a combination of both. For the child with central nervous system motor involvement, following the developmental sequence may actually be detrimental to his/her motor development (Bobath & Bobath, 1975).

Section I of this paper will address the components of motor development in the normal child. It will then relate these components to the movement patterns in children with abnormal motor development. Section II will discuss the importance of having Pediatric Therapists (Physical Therapist and/or Occupational Therapist) on the teaching team who are knowledgeable about the motor difficulties of these children.

The pediatric therapists can provide effective alternatives for educational programming within other areas of curricula as well as setting up reasonable goals in the area of motor development. The alternatives will encourage the advancement of motor skills across all educational programs and prevent the development of contractures and deformities.

I. Normal Motor Development

Motor development is the development of the infant from mass movement reflex activity, through a sequence of developmental milestones, to become an upright, walking individual with such basic skills as jumping, hopping, and skipping (Stone, Note 3). For normal motor development to occur, there must be a harmonious interaction between the internal maturation of the central nervous system and the external interaction of environmental experiences. The observable result of central nervous system maturation is the acquisition of developmental milestones. To truly understand motor maturation, the developmental milestones need to be observed in their component form because all children do acquire normal components of movement maturation, but they may not perform each developmental milestone (Bobath & Bobath, 1975). An example of this is that all children do not creep on all fours. By looking at chidren who may move by stomach crawling and then move directly to pulling up to standing and walking is representative of this. In addition there are children who never crawled due to environmental conditions. This last example is often observed in European countries where carpeting of floors is uncommon. These children still develop the components of movement required for crawling and follow the normal course of development to obtain the ability to ambulate.

In order to study the components of movement required for any developmental activity, one must have a thorough understanding of the Normal Postural Reflex Mechanism (Bobath, 1971). The Normal Postural Reflex Mechanism (NPRM) is the basis for all movement patterns and it is matured during the normal developmental process. There are three main components which consist of: (1) normal postural tone, (2) normal repertoire of movement patterns, and (3) normal reciprocal innervation.

Normal postural tone is the readiness state of the body for movement and the maintenance of a position. Postural tone is constantly changing and adapting to allow the body to move into and maintain positions against gravity. Normal postural tone must therefore be low enough to allow for movement and high enough to maintain a position in space.

Normal repertoire of movement patterns are basic, automatic movement patterns that all motorically intact individuals possess. These are the patterns an individual uses to move into various positions against gravity and maintain balance in various positions against gravity. The earliest type of automatic movement patterns observable in the infant are the righting reactions. They are first seen as early as three to four weeks when in the prone position (stomach) the infant briefly rights his/her head against gravity. As the righting reactions develop, the infant is able to assume more and more difficult positions against gravity. The righting reactions "get you up and turn you around." They introduce the important movement component of trunk rotation. Trunk rotation is first seen behaviorally when the child rolls over segmentally from the stomach to the back. This rotational component has been termed the "corkscrew effect" (Stone, Note 3) because the child is continuously rotating about himself/herself. Biomechanically, it is important to observe that the use of trunk rotation allows for less strength and balance to move into various positions. An adult with a strained back will automatically roll over to the side before sitting up as the movement is not as strenuous as coming straight up to the sitting position.

The equilibrium reactions are balance reactions against gravity which "maintain your position in space." They are composed of the propping reactions and the tilting reactions.

The propping reactions are automatic protective reactions which are utilized when there is a large displacement of the body against gravity. When a person trips while walking, and she/he is unable to regain balance, the arms are automatically brought forward to cushion the fall and protect the face. Propping reactions are similar enough in all individuals. The tilting reactions are refined movements of the trunk and limbs against an antigravity pull to maintain the body upright against gravity.

The tilting reactions are used in all movement activities to maintain the body in equilibrium so that movement against gravity and maintenance of a position against gravity may occur. With maturation of the Central Nervous System and continued interaction with the environment, the child has acquired sufficient balance, strength, and coordination to stand up from a back lying position in a straight, planar motion (Milani-Comparett, & Gidoni, 1967). This is generally accomplished by five years of age. The righting reactions are now integrated into the maturational process and the more refined equilibrium reactions are underlying the child's automatic movement patterns.

Normal reciprocal innervation is the third component of the Normal Postural Reflex Mechanism. Normal reciprocal innervation allows for the smooth coordination of a movement pattern. A good example is observing the maturation of the hand to mouth activities of an infant. When an infant first begins finger feeding, mouth aim is not accurate and more food is on the infant than in his mouth. With maturation, the aim improves greatly, utensils are introduced, and eventually the hand to mouth process of eating with utensils becomes mature, coordinated motor behavior. By six months of age the infant has acquired the basic components of gross movement patterns through (1) the acquisition of trunk rotation, (2) the separation of one shoulder from the other, and (3) the separation of one hip from the other. Gross movement patterns from this stage on are merely refined and more coordinated (Bobath & Bobath, Note 1).

The three components of the Normal Postural Reflex Mechanism: tone, repertoire of automatic movement patterns, and reciprocal innervation, build upon each other. There must first and foremost be normal tone upon which normal automatic movement patterns may occur and subsequently become refined through normal reciprocal innervation.

With this basic understanding of the Normal Postural Reflex Mechanism in mind, the development of normal movement patterns in the normal infant from birth to ambulation (Gesell & Amatruda, 1947; Milani-Comparetti & Gidoni, 1967) will be presented.

Birth

The normal infant is born with two automatic responses necessary for proper nurturing. These responses are: automatic sucking when anything is introduced into the infant's mouth and the ability to turn the head to one side to get sufficient air while on the stomach. The newborn is unable to support his/her body against gravity. This is observed by holding the infant vertically; the baby's head goes to one side. No postural control is observed when pulled to a sitting position; the baby will bend over at the waist. When held under its stomach, the baby will completely fall into gravity. Even though the motor system is immature, the infant is constantly using the sensory system of touch, smell, taste, vision, hearing, to gain information about his/her new gravity based environment.

Six Weeks

The infant has now attained his/her first repertoire of movement against gravity with the initial attempt to momentarily right his/her head in space. When she/he is held vertically and leaned slightly to the side, the head will realign itself to the vertical position. On the stomach she/he will briefly hold the head up. The six week old infant does have a repertoire of movement patterns. Examples are mass, uncoordinated movements of the arms and the legs, putting the hands to the mouth with the head turned to either side, spontaneously rolling over, and turning the head and the rest of the body following as a unit. At rest, an asymmetrical attitude may be noted. The head is turned to one side, the arm and leg on the face side may be extended, while the arm and leg on the skull side may be flexed. This is another mass movement pattern which is termed an Asymmetrical Tonic Neck Reflex (ATNR) (Bobath & Bobath, Note 1). The normal child is not bound down to this asymmetrical posturing; it is only an attitude which she/he occasionally assumes and disappears after the fourth month. (If the ATNR is present in the child with central nervous system dysfunction, it is a pathological, obligatory response causing the head to move from side to side. The child is not able to voluntarily move out of this mass pattern). The six week old is reaching out to his/her environment with every sense. She/he is beginning to anticipate events through repetition, and is on the way to overcoming gravity.

Four Months

The four month old has become quite a social being. Social smiling and cooing has won many hearts, and the infant is beginning to express personality in numerous ways. By four months of age the infant is able to reach out and bat at objects while in the infant seat or on his/her back. Both these positions give the postural control she/he lacks so that she/he may concentrate on moving the arms grossly in the direction of an object. Both hands and the objects need to be in the field of vision so as to be able to put a reaching schema together (Uzgiris & Hunt, 1975).

The infant also has gained head control so that on the stomach she/he may keep the head up and look

around for extended periods of time. Not until five months of age, will she/he acquire the strength, balance, and mobility to reach out for a toy in this position. Right now she/he has to use both arms to remain against gravity. Rolling from the stomach to the back is another movement pattern the four month old has acquired. She/he is able to separate the shoulders from the pelvis and rotate the body like an unwinding corkscrew. By rotating from the stomach to the back, the infant uses gravity as an assist as she/he does not have the strength or the balance to roll into gravity. The four month old has acquired the ability to separate one shoulder from the other in gravity controlled positions, to hold the head up for long periods of time on the stomach, move the head separately from the rest of the body, and roll over from the stomach to the back through the development of trunk rotation.

Six Months

The six month old has developed a great deal of mobility. She/he has developed sufficient strength, balance and mobility to roll over from back lying to the stomach. She/he is able to sit alone and use the arms for support. She/he is able to reach out for a toy while on the stomach. The following movement patterns are needed for this task: (1) separation of the shoulders from the pelvis (2) separation of one shoulder from the other shoulder and (3) separation of one hip from the other hip. The trunk must rotate so that the body weight is resting on one side while the other side is able to move freely to reach out and grasp the toy. This also requires balance against gravity.

By six months of age the infant's gross movement patterns are becoming truly selective; from here on the infant is merely acquiring more strength, balance, and coordination to enable himself/herself to move into and attain more antigravity position.

Seven to Nine Months

The infant is now able to rotate up to the sitting position and creep on all fours. (Some children may crawl on their stomachs, others may scoot along on their bottoms, and some may do neither of these because culturally they are not allowed onto the floor). The infant will begin to pull up to standing, often with both legs together. As the movement becomes more refined one leg at a time will be used. The movement patterns of trunk rotation and separation of the shoulders and hips are working more and more against gravity and the baby is stronger and has more balance.

Ten Months to Ambulation

The child now has begun pulling up to standing and cruising. The body has sufficient balance with the aid of holding on to a support, to move the legs reciprocally in this position. She/he then begins to stand alone for short periods and to get back down to the floor by bending the knees and flopping backwards on the seat. Standing alone is followed by walking. At first there are a few steps between two safe supports with the entire body diligently working to maintain an upright position; arms are held high and the child is way up on his toes. With more balance and much practice, the arms come down, the feet are flat on the floor, and the infant learns to push and pull toys at the same time she/he is walking. The feat of attaining an upright position against gravity has finally been mastered.

It is interesting to note that an infant is able to be placed in a position and maintain balance before she/he is able to move into that position. Another important factor to notice is one which Milani-Comparetti (1975) term "competition of patterns," while an infant is busily acquiring one skill, a previously learned skill may become unimportant. The child may not perform it at all or the child may revert back to a more immature motor pattern (Peiper, 1963, Bobath & Bobath, 1975). A child that is beginning to walk with some ease may not play in the sitting position. When on the ground, she/he will immediately rotate up to the standing position.

The maturation of the Normal Postural Reflex Mechanism along with environmental interaction has allowed the infant to attain the ability to ambulate freely. This acquired freedom will allow the infant to get about his/her business of learning through doing with motor skills just another tool to aid in the total development.

II. Abnormal Motor Development

Abnormal motor development may be viewed in terms of the postural reflex mechanism also. This interference of orderly neuro-motor development is observed in Down's Syndrome children, blind children, or as a complete arrest in motor development which is observed in children with Cerebral Palsy.

This insufficiently developed postural reflex mechanism is seen in the form of: (1) poor head control, (2) lack of trunk rotation, and (3) poor balance (Bobath, 1971).

General developmental delay is quite different from cerebral palsy and will be discussed separately. The general developmentally delayed child is usually globally delayed in all areas of development. These children demonstrate primitive movement patterns such as continued reflex kicking, lack of weight bearing when lowered to standing, and persistence of a startle response. A general developmental program to encourage head control, trunk rotation, and balance responses will almost always show definite improvement, especially when these children have educational intervention as infants. A pediatric therapist on the teaching team will offer added information of each child's individual skills and will be able to assist the teacher in working with the child motorically.

The cerebral palsied child demonstrates a much greater problem educationally. The insufficiently de-

veloped postural reflex mechanism demonstrates the presence of abnormal tone, pathological reflex activity, and primitive, uncoordinated movement patterns (Bobath, 1971).

Abnormal postural tone may be too high as in the spastic child which causes great difficulty in moving against gravity. If the individual does move, it is usually in total flexion or total extension (Milani-Comparetti, Note 2).

The athetoid child demonstrates fluctuating postural tone. She/he may often demonstrate uncontrollable wide, rotatory movements. Abnormal postural tone causes difficulty in maintaining postural control against gravity.

The hypotonic child demonstrates abnormally low postural tone; this type of tone is also termed flaccidity. Hypotonic children are not as common as spastic and athetoid children. The mixed child demonstrates both spasticity and athetosis. Depending on the dominant tone characteristic, the child may be an athetoid with spasticity, or a spastic with athetosis.

Pathological reflex is seen in the stereotyped movement patterns, the inability to perform selective movements, and the inability to move against gravity. The primitive synergy attitudes of babyhood are often full blown obligatory reflexes which, along with abnormal tone, produce abnormal movement patterns.

III. Techniques in the Classroom

A developmental sequence curriculum is unable to effectively deal with the motor deficit in cerebral palsy. The motor skills program must be individualized to meet the child's needs. In performing a motor assessment, the physical therapist must evaluate the abnormal tone, the abnormal movement patterns resulting from the abnormal tone, and pathological reflex activity. The emphasis is placed on evaluating tone and movement patterns because these two areas are going to be emphasized in procedures for handling, positioning, and motor skills programming in the classroom. It is important to recognize the presence of pathological reflex activity so as to understand the child's motor deficit. Since pathological reflexes manifest themselves differently in individual children, a thorough analysis of the child's abnormal movement patterns will provide more specific information than the presence or absence of specific reflexes.

The child's motor development program must take the following into consideration: (1) abnormal muscle tone, (2) abnormal movement patterns, (3) the prevention of contractures and deformities and (4) the components of movement which the student is lacking. The pediatric therapist should offer this information to the teaching team. Effective educational programming may occur when this input is provided.

The therapist will be able to train the teacher and parents specific handling techniques for each individual child in the areas of feeding, toileting, lifting, carrying, and proper positioning for maintaining good body alignment.

A child's motor functioning should not interfere with the other areas of his educational programming. Cognition, language, and socialization are not dependent upon motor performance, although motor performance may make development in these areas easier. Understanding a child's motor performance will allow alternative behaviors to appear much earlier in a child's educational experience. The pediatric therapist along with the other members of the teaching team will be able to provide these learning alternatives by objectively looking at each child individually. The curriculum must be adapted to the child, not the child to the curriculum.

A child's motor abilities and disabilities are only one aspect of his/her functioning. The factors influencing development need to be brought into perspective, and solutions to proper learning need to be offered, so that each student's maximum potential for development is reached.

Arousal Levels

The therapist should take into consideration a child's motor abilities and movement patterns when working in the classroom. She/he must also consider the child's general arousal level (Stockmeyer, 1972). Some children seem to be hypersensitive to anything that goes on around them or to them; they appear to have a total emotional and body response to the environment. They are sometimes termed "tactilly defensive." They may be in constant motion, but their motion has no meaning. Their emotional levels go from one end of the spectrum to the other. How the therapist and the teacher approach this child will be totally different from the child who appears apathetic. If poked, tossed, or moved, there is no change in the student's behavior. The first child's arousal level needs to be lowered for effective learning to take place, where the second child's arousal level needs to be heightened for effective learning to take place. The pediatric therapist will be able to give the teacher safe, effective ways to deal with each individual child's arousal level. The teacher must have counseling and advice so that each child is dealt with according to his individual needs and not treated in a blanket fashion.

Effective Positioning

The purpose of positioning is three fold: (1) reduction of abnormal tone, (2) prevention of contractures and deformities, and (3) assistance in educational programming.

Postural tone is affected by the child's position (Bobath, 1971). The severely spastic child may be unable to bring his hands to midline in the supine (backlying) position due to abnormally high postural tone pulling his body into gravity. In the sidelying position the child's postural tone tends to normalize, and gravity assists in bringing the hands to midline (see figure 1).

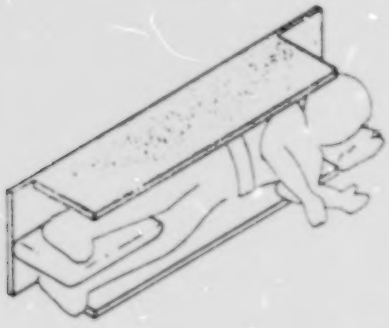

FIGURE 1. Severely spastic child in supine. He is unable to bring his arms to the midline. Below, in the side-lying position he is able to bring his arms to midline.

Contractures and deformities can affect a child's physical health. A severe scoliosis (curvature of the spine) may restrict a child's motor abilities and cause difficulties in management of daily living activities. Legs contracted in a scissored position not only prevent functional movement of the lower extremities, but also cause difficulty in perineal care. The important points in prevention of contractures and deformities are to maintain trunk symmetry and to change positions at least every sixty minutes.

Positioning may be effectively used as an aid in educational programming. The child with poor head control may be unable to visually track an object in the sitting position. By placing the child supine, with his head supported, she/he may have the postural control needed for the activity of visual tracking. An asymmetrical position which is not advantageous physically, may be desirable educationally. This is especially evident with older, severely motorically involved children. In this situation, positioning should favor educational programming as long as there is no physical contraindication. The asymmetrical position may be counteracted afterwards by time being spent in a symmetrical position.

There is a wide range of commercial equipment as well as homemade equipment available for adaptive positioning in the classroom. Adaptive equipment should meet the individual child's needs. Commercial equipment is often costly and usually requires modifications. With the knowledge of the child's specific needs, the therapist may design individualized equipment which may be built locally. The bureaucratic structure of school districts often does not facilitate the engaging of carpentry services. An objective presentation of equipment adaptability and cost usually justifies the need for seeking these services.

Motor Skills Programming

It is not reasonable to expect attainment of ambulatory skills for all motorically impaired children. It is reasonable to strive for prevention of contractures and deformities, so that secondary problems do not impede the attainment of a motor goal. Teachers and parents may be instructed by therapists in individualized exercises which will help to prevent contractures and deformities and aid in developing more selective movement patterns.

For the best functioning of a motor skills program the therapist should be integrated into the classroom setting. All involved with the child should have understanding and skill in handling the child. Motor skill programs should not be the mainstay of the child's educational program. They should merely be an integral part of the program. A child's motor abilities should be taken into consideration in all areas of his programming; motor skills should not impede other areas of programming.

Summary

Understanding the motor abilities and disabilities of the multiply handicapped child is needed in educational programming. The presence of a pediatric therapist on the teaching team is a prerequisite for this to occur. A teacher is able to make very astute behavioral observations in relation to the child's motor functioning. With the aid of motor development curricula, she/he is able to behaviorally see the motor milestones an individual child has attained. The pediatric therapist, through proper assessment, is able to determine: (1) the components of movement the child has and those which he needs, (2) the presence of contractures and deformities, which may be impairing additional skills (3) the proper handling techniques for each individual child, and (4) a realistic motor skills program for the child. The therapist and the teacher together will be able to interpret the educational implications of the child's motor abilities, and they will then be able to plan alternatives for his specific learning needs.

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Manual Communication Training for Severely Handicapped Students[1]

FRANCEY KOHL, GAIL FUNDAKOWSKI,
BRUCE MENCHETTI and SHARON COLEMAN
University of Illinois at Urbana-Champaign

Communication is a basic human behavior normally beginning at birth. From earliest infancy babies communicate needs, desires, and reactions to their environments through laughing, crying, or cooing. Adults communicate a whole spectrum of emotions through smiles, frowns, and body language. If a person is angry with someone else, the first person might indicate this anger through frowns, a taut body posture, or sarcastic comments. Happiness can be shown through smiles and affectionate hugs. These communications transmit understandable information that can result in observable changes in the behavior of the people involved in the information exchanges.

Communication is best understood within a social context; it involves a two-way exchange of information where the communicator transmits messages to other communicators and processes messages in turn from them. Communication is a social process that facilitates the participation of an individual in various social activities such as work, education, and community relations and increases an individual's independence by enabling him/her to consistently and positively manipulate the environment.

The ability to communicate is a concern of both regular and special education because of its importance in fostering social, educational, personal, and community survival competencies. An impaired ability to communicate has serious social consequences that adversely effect a student's education, vocational, and personal relations. It fosters dependency relationships because s/he cannot effectively influence the environment.

For most educators, the concern for developing communicative competence has focused on the acquisition of vocal communication. Emphasizing vocal skills is an appropriate priority for most students since they have generally mastered the associated physical and cognitive prerequisites for learning verbal language; that is, they see, hear, discriminate between sets of objects, and/or can voluntarily control their production of sounds. Consequently, most children have acquired fairly sophisticated speech skills before they enter school. However, not all people who understand verbal communication are capable of speech production. In particular, severely handicapped students may have anatomical features or speech impairments (ranging from reversed breathing to abnormal tongue and lip movements) which prevent the development of understandable articulatory skills and hence of functional vocal communication.

If a child manifests structural impairments which eliminate or drastically reduce the possibility of developing functional verbal language, the educator must identify or develop an alternative nonverbal communication system. In this paper, a nonverbal communication system is simply defined as a system that does not use speech or vocal productions to transmit its message. A nonverbal communication system, like a verbal system, is an interactive process: the nonverbal communicator must be capable of transmitting messages and receiving functional input from other communicators. A nonverbal communication system, like its verbal counterpart, must also include the provision for initiating and terminating communication at the discretion of the other communicator. Within a nonverbal system the nonverbal communicator might be capable of understanding either verbal or nonverbal communication from other communicators; however, s/he is only capable of expressing him/herself through nonverbal means.

Issues Related to Teaching Nonverbal Communication Skills

A number of strategies for establishing nonverbal communication are available to the teacher of the severely handicapped. These include simple gestural or coding systems (see Scheuerman, Baumgart, Sipsma, & Brown, Note 1), variants of manual communication (Signed English, American Sign Language, Manual English, Fingerspelling, Total Communication (see Wilbur, 1976)), and the use of a variety of nonverbal prosthetic devices (see Vanderheiden & Grilley, 1975). Each communication system has particular advantages and disadvantages when considered for use with severely handicapped students. A partial list of factors to be considered in the evaluation and selection of nonverbal alternative or auxiliary communication systems would include the following:

1. *Cost.* This variable quite obviously refers to the expense of securing the communication system. Evaluation should address whether the initial outlay is practical in terms of the long run needs of the user and should identify costs of maintaining the device over time.
2. *Mobility.* Mobility of a communication prosthetic refers to the weight, size and portability of the system and its power source. The mobility of the device affects when and where communication can

[1] The authors would like to thank both Marilyn Kirk and Nancy Eisenberg for their help with aspects of this task force, and Barbara Wilcox for her comments on the manuscript.

occur. For instance, fully portable devices allow the user to communicate across environments and at his/her discretion, while devices requiring an external power source limit communication to one room and usually a table. In such a case, communication is externally controlled and dependent on the approach of others.

3. *Adaptability.* This factor refers to additional or optional equipment that may be added to accommodate varying disabilities (e.g., switches that can be operated by either hand, head, knee, or blow and suck responses). Increasing the number of response options increases the probability that a range of specific disabilities could be accommodated by a single system.

4. *Training others.* While the nonverbal student is most clearly the focus of any evaluation of auxiliary communication systems, there are, nevertheless, considerations relating to others in the student's environment. In examining a potential system, care should be taken to assess whether those who are communicating with the user can do so using the device as a mediator. For example, at a very basic level, anyone interacting with a pupil who uses a system of scanning with a communication board must be taught how to scan the items for student selection. Other auxiliary systems may require that others in the environment learn various codes in order to respond to student messages (e.g., reading manual signs). Systems that require special training in order to interpret student communication do reduce the number of persons who could communicate with the user and, therefore, restrict the user's communication potential across environments.

5. *Communication potential.* Communication prostheses vary in the extent to which they can accommodate an extensive vocabulary and/or a variety of grammatical structures. It would seem that as the communication potential of a device increases, the user's ability to control his/her environment would also increase. Conversely, a device which permits only limited social exchange ("yes," "no") or allows the user to indicate only basic needs such as hunger, thirst, and bathroom access would substantially reduce the user's independent functioning.

6. *Prerequisite skills.* An activity routinely neglected in the selection of an appropriate common mediator is an analysis of the skills the user must possess in order to effectively interact with the communication prosthetic. All systems include some type of motor and/or cognitive prerequisites ranging from controlled eye pointing to classification and spelling skills. Knowing the prerequisite skills for manipulating a device allows the trainer to correctly match the skills of a potential user with an appropriate device, or to adequately train the user to utilize the device. For instance, a prosthetic requiring (among other skills) a push/pull move in one of four directions should be matched only to a user who has the ability to perform that move. A failure to delineate all the prerequisite skills can result in a mismatch of technique to user, wasted training time, wasted money, and discouragement on the user's part in his/her attempts to communicate, and most unfortunately, attributions of "inability" to the potential communicator by his/her environment.

7. *Training procedures for the user.* A frequent assumption is that once an appropriate communication prosthetic is identified, the target student will automatically be able to employ it for effective communication. Given a system which matches the student's physical capabilities, and supplies the necessary language functions, the user must still be trained to use the system. For example, students must be taught the correspondence between symbolic representations on a language board (or manual configurations) with particular objects/events in the environment, and they must also learn the relationship between a communication and its consequences (when one points to juice s/he gets juice). Deciding if a system is appropriate for a potential user requires (as a minimum) training procedures that include a list of prerequisite skills for using the device, a list of the skills to be taught and their sequencing, and delineation of specific instructional procedures to develop these skills. One of the most critical components in successfully matching a device to a user is having efficient, well analyzed training procedures. If learning to use the device requires months of toil, the ultimate goal of functional communication may well be lost in the shadow of the less meaningful goal of properly manipulating the prosthetic system.

Communicating through gestures or coded movements of body parts is a superficially appealing system. Gestures are primarily child-based systems developed to facilitate rudimentary communication between a child and others in his/her environment. Gestures are flexible, involve no expense, require only student movement, and, are therefore completely portable. Disadvantages to gestural systems include that they are completely idiocyncratic, probably not comprehendable across settings and people, and are extremely limited in ability to expend the size and complexity of communication. Since gestures also require voluntary control of the hands and arms, a student who is incapable of either initiating or controlling the requisite motor behaviors cannot be accommodated by this type of communication system.

The concept of a nonverbal communication prostheses is inherently appealing since it raises the prospect of prosthetizing the handicapped individual or restructuring that individual's environment to facili-

tate communication. There is a tremendous selection of nonverbal prosthetic devices available which range from easily constructed fundamental aids (head pointers and language boards) to complex and complete electronic communication systems (see Vanderheiden & Harris-Vanderheiden, 1976; and Vanderheiden & Grilley, 1975; for detailed descriptions). Naturally, the cost, versatility, portability, etc. of the aids also vary considerably. Each communication device should be evaluated with regard to the resources, specific skills, and communication needs of the potential user.

A system of manual communication for severely handicapped students would appear to have a number of advantages: it is without cost, requires only the student's body and is therefore completely portable, is infinitely expandable with a communicative potential equal to that of spoken language, is recognized beyond the community of severely handicapped students and their teachers, and contains a large number of iconic signs or movements which are generally understood even by those not trained in the system. The disadvantages of a manual communication system include the fact that both the user and receiver of signed communications require training on each lexical/grammatical item, as well as the problem that students with physical handicaps may lack the motor control necessary for sign production. With populations other than the physically handicapped the latter drawback assumes less significance, and manual signing becomes a viable auxiliary communication system. This is especially so if signing can be shown to facilitate speech in the nonverbal severely handicapped as some have suggested (Creedon, Note 2).

Task Analysis and Instructional Procedures

The remainder of this task force presents a rudimentary analysis for training expressive manual communication in severely handicapped students. Training is broken into two major phases: *imitative sign production* where the student is trained to produce a manual sign in response to the trainer's model and *expressive sign production* where the student is taught to manually label objects/actions. Both phases use physical prompting (or handshaping) as a teaching and or error correction technique. In general, the procedures follow paradigms presented elsewhere (Stremmel-Campbell, Cantrell, & Halle, 1971; Fouts, 1972). Terminal objectives and a flow chart of a sample instructional procedure are presented in Figure 1.

A description of the characteristics of various manual systems and the specific entries in the present training sets are presented in Appendices A and B. It is assumed through out that a system of simultaneous communication is being employed where teachers adults use signs to complement their ongoing verbal behavior and hence produce both vocal and manual cues simultaneously.

Selection of training items. As with any language program, the identification and selection of lexical items or signs to be taught is of critical importance. Probably the most salient criterion is that content be functional: training items should be instrumental in giving the student more control over events in his/her environment. The concept training literature (e.g., Becker, Englemann, & Thomas, 1975) further suggests that signs grouped for training should be dissimilar (e.g., with regard to position in space, number of hands used) in order to enhance the discriminability of the items. The items selected for training here (see Table 1) were chosen to communicate basic needs to be functional in public school environments as well as the particular life space of each student.

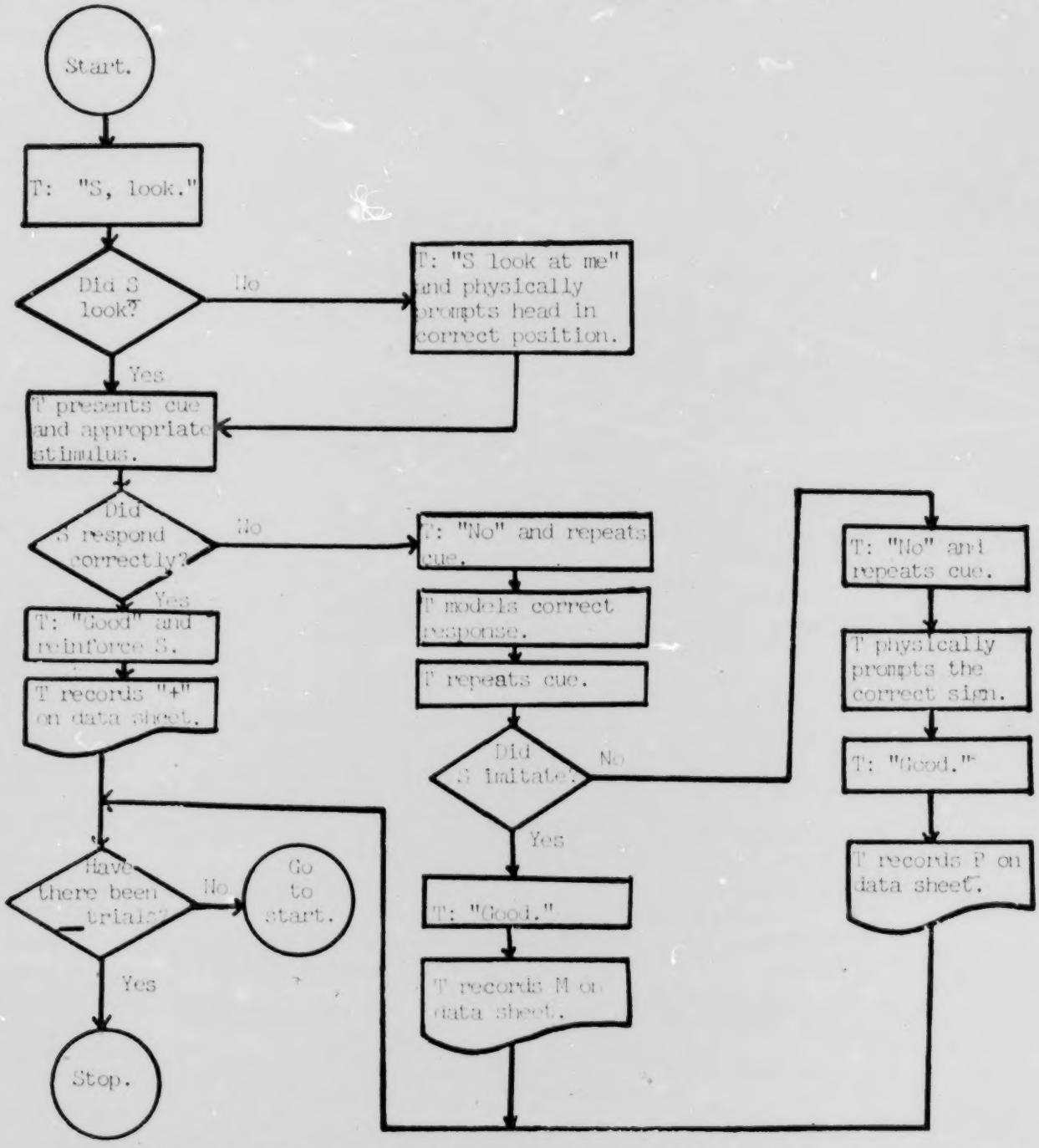
TABLE 1

Training Items

Set I:	Drink	
	Eat	
	Wash	
	Toilet	
	Individual reinforcing item (e.g., Baby (doll), Ball, Book, Cookie)	
Set II:	Student's name	
	Book	
	Mode of transportation to school (Bus/Cab/Car)	
	Chair	
	Coat	
	Crayon	
	Item specific to student needs (Crutches/Glasses/Wheelchair)	
Set III:	Apple	Milk
	Baby (doll)	Money
	Cat	Napkin
	Dog	Hamburger
	Door	Orange
	Hat	Sandwich
	Light	Water
	Look	
Situation — Specific Signs:	Fire	Play
	Birthday	Happy
	Boy	Hurt
	Girl	Mad
	Clean	Sad
	Dirty	Sick
	Halloween	Rain
	Thanksgiving	Sun
	Christmas	Sit
	School	Stand
Common Gestures:	Come	
	Down	
	Go	
	Goodby	
	Hello	
	No	
	Yes	
	Up	
Home-Based Signs:	Selection of limited additional items which are functional in home settings (e.g., Television, names of siblings).	

Data collection. Systematic monitoring of student performance is necessary to determine when students should be moved through the program and new vocabulary items introduced. A variation of a data sheet devised by Saunders and Koplick (1975) is recommended to record and assess student progress (see Figure 2). The teacher prepares the data sheet prior to training by recording the name of the student, the

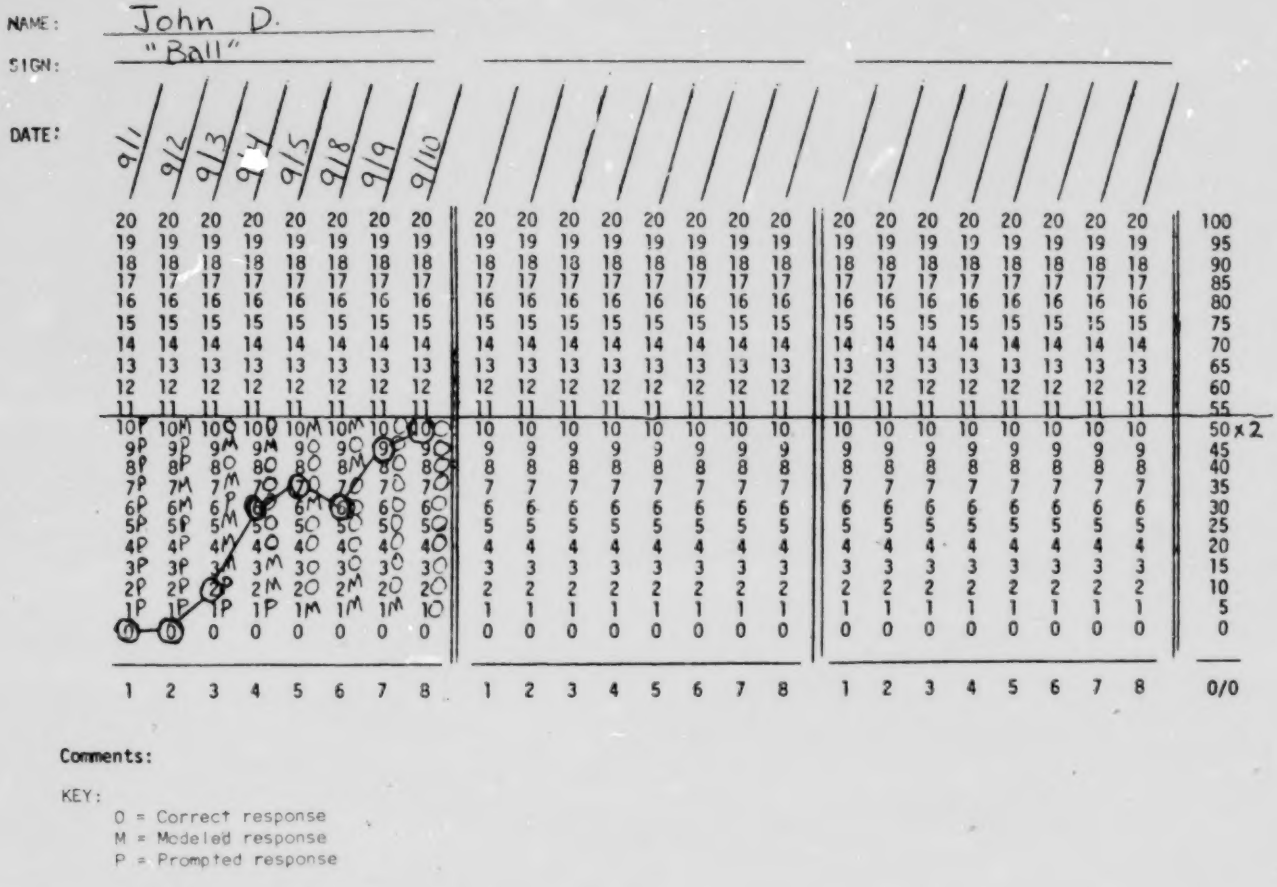
FIGURE 1: Training objectives and sample flowchart of instructional procedures



IMITATIVE TERMINAL OBJECTIVE: Given one object or picture and one of the following verbal/manual cues, "*S* show me _____" or "*S*, sign _____ (name of object)", *S* will imitate the specific sign modeled by the *T* within _____ seconds for _____ out of _____ trials for _____ consecutive days.

EXPRESSIVE TERMINAL OBJECTIVE: Given an object or picture and the verbal/manual cue "*S*, what is this?" or "*S*, show me the sign?", *S* will make an acceptable approximation of the manual sign within _____ seconds for _____ out of _____ trials for _____ consecutive days.

FIGURE 2. Sample data sheet with data to show representative usage.



sign(s) being trained, and the date in the appropriate spaces. The criterion performance level that has been decided upon by the teacher is marked by drawing a horizontal line across the data sheet.

The data sheet consists primarily of the repeated numerals 1 through 20. This represents the number of trials used to train a sign on a given day. The columns are ordered from the bottom to the top of the page and divided into three blocks of eight columns each. Each block serves as a separate recording space for the number of trials to criteria for any one sign. The tilted lines above each column provide a space to enter the date of the training session. Three different signs can be recorded on one sheet. If more than eight sessions are needed to reach criterion for a sign, the data sheet can be easily extended. The column of numbers (5-100) provided at the extreme right represents the percentage equivalent of each numeral in the column.

Recording the response of the student is accomplished by writing a "P" on top of the trial number for a physically prompted response, by writing "M" on top of the trial number for a modeled response, and by circling the trial number for a correct unprompted response. Each trial in the training session is recorded in this way. The number of unprompted correct responses is made apparent by counting the number of circles recorded by the teacher that day. Then the numeral equal to the total number correct is highlighted by drawing a dark circle around it. This circle is connected to the preceding circle (the previous day's total correct) in graphic style. In Figure 2, hypothetical data has been recorded and graphed. Using this data sheet, program progress is displayed conveniently for the teacher. If in the judgment of the teacher the student is making insufficient progress, the criteria for performance should be lowered. If a student still fails to reach criteria, it may be necessary to add another step to the task analysis. Other causes of failure such as satiation of the reinforcer and level of deprivation of the student should be examined.

Generalization. Programming for the generalization and maintenance of responding is a necessary component in all instructional programs for severely handicapped students. Generalization can be programmed into a manual language curriculum in a

variety of ways. First, all persons who have contact with the student should use signs with the student. This can be done by training teacher's aides and other staff members as well as parents to sign to and require signs from the student. Furthermore, after the student has reached criterion with one instructor, another instructor should be introduced. Cues used to elicit the sign should also be varied. Different types of objects should be used so that the student learns that one sign stands for a whole class of stimulus items. Finally, the instructional setting must be varied in order for generalization to occur across environments.

A caution. While the use of manual system may provide a functional auxiliary communication system, the trainer should be sensitive to the need to fade signs if vocalizations are initiated since verbal language is indeed the least restrictive mode.

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APPENDIX A

Characteristics of Manual Systems

In some respects, the structure of sign language is quite similar to the structure of oral language. Distinct visible units, called cheme, are analogous to the phoneme or sound unit in oral language. Sign language also contains a vocabulary of signs (lexicon) and grammatical rules for combining signs (syntax). Each sign has three characteristics that distinguish it from all other signs. These features are (1) the place of the hand(s) in relation to the body (their location in space), (2) the number of hands used and their configuration, and (3) the specific movement of the hand(s).

There are a number of manual communication systems that have been developed. It is important to realize that no single system can sufficiently handle the special educational needs of severely language impaired students. Components from several systems make up the content of this curriculum. The majority of signs used are derived from Signed English or modifications of American Sign Language (ASL). A brief description of various systems will be given.

American Sign Language. ASL is the native language of 5,000,000 deaf people in the United States. In fact, it is the third most widely used non-English language in the country (Spanish — 4,500,000; Italian — 600,000). It has the components of, and is considered a true language. The syntactic rules of ASL are quite different from the English rules. For instance, ASL does not use indefinite articles nor does the word order of sentences parallel English rules. Many ASL signs look similar to the object or event they are supposed to represent. These are known as iconic signs and are borrowed by other manual communication systems.

Signed English. Signed English uses many ASL signs which are strung together in English word order by the use of fingerspelling and conjunctional signs. There is a lexicon of 2,500 signs of which 1,700 are from ASL. The plural for regular nouns is marked by fingerspelling 's' after the sign, and for irregular nouns it is marked by reduplication of the sign. Four sign markers, which parallel English syntax, are used with verbs: (1) one for the past tense of regular verbs, (2) one for the past tense of irregular verbs, (3) one for the third person singular present, and (4) one for the past participle. This system was developed at Gallaudet College and is widely used.

Signing Exact English. Signing Exact English (SEE) is not considered a true language because its syntactic structure was designed to parallel that of spoken English. In other words, this system is an attempt to translate spoken English into signed English. SEE retains many of the ASL signs but tries to parallel English syntax or grammar. For example, in this system regular plural nouns are formed by signing 's' after the noun sign. In the SEE system words are divided into basic words, complex words, and compound words. SEE is the official system of the National Association for the Deaf.

Manual English. Manual English is characterized by its extensive use of fingerspelling. If there is no sign available for a particular word, the word is fingerspelled so as to maintain English sentence structure. Manual English also tries to reinforce the English structure through the use of signs. In this system, if an English word has more than one meaning and each of those meanings has a separate ASL sign, then the ASL signs are retained. For example, Manual English uses two separate signs for the English word "right."

One of these signs indicates direction and the other signifies correctness.

APPENDIX B

Glossary of Selected Training Signs

The majority of the signs in this glossary are based on Signed English signs as found in *The Signed English Dictionary for Preschool and Elementary Levels* (Bornstein, Hamilton, Saulnier, and Roy, 1975). Should the teacher or parent wish to use this book in conjunction with the glossary, the pages on which these signs can be found are indicated by numbers in parentheses; i.e., (30) following the sign names. Also included are ASL signs as presented in *Stop, Look and Sign*, Book II (Lake-McHenry Regional Program for the Hearing Impaired, 1975). Pages on which these signs can be found are indicated by (SLS, 34). Other signs are modifications of standard ASL signs (as derived by the authors), and are indicated by (M) after the sign name.

Modifications for individuals with motor problems should be made as necessary. Any understandable approximation of the standard sign is acceptable as long as it is used consistently by the signer. (An example of a sign modification would be the use of the A shape, rather than the T shape to form the sign TOILET.) Recipients of the sign should be aware of the modifications. In these cases, it is suggested that the instructor or parent sign the correct sign to insure that the student develops good manual receptive language across instructors. In addition, a model will be present in the event that the student progresses to the stage in which s/he can produce the correct sign.

Descriptions for the signs are in a standard format:

SIGN ( )

PICTURE

(1) Number of hands involved.
(2) Hand and finger position.
(3) Movement in space.
(4) Number of repeated movements.

This format is provided so that the teacher or parent can consistently produce the sign correctly to the student.

To further assist in sign production, the teacher or parent should know the names of each finger (thumb, index, middle, fourth, and little), the manual alphabet, the number signs from one through ten, and certain handshapes that are used to make the signs (Bornstein, 1975, xiv). Handshape positions are described according to the direction that the palms, fingertips, and/or knuckles are facing: in, out, up, down, right, or left. These are the most common handshapes. They are used extensively in making the signs.

Sample letter shape "a". See complete alphabet

Open B

Bent B

Sample number shape 1. See numbers 1-10

Bent V

Flat O

Claw shape (or hand)

LEVEL I

School Signs

DRINK (78)

1. One hand.
2. RH in C position.
3. Place C shape on mouth as if drinking.
4. Once.

EAT (82)

1. One hand.
2. RH in closed O shape.
3. Start at midline. Bring fingers to mouth, fingertips touching lips.
4. Once or twice.

TOILET (260)

1. One hand
2. RH in T shape.
3. At shoulder level, shake hand from right to left.
4. Twice.

WASH (277)

1. Two hands.
2. RH in S shape; LH in open B shape, palm up.
3. Rub RH in circular motion on LH.
4. Once or twice.

Signs for Reinforcing Items

BABY (DOLL) (15)

1. Two arms.
2. Arms folded perpendicular to body, hands up.
3. Place right arm in left arm at waist and move left to right as if rocking a baby.
4. Twice.

BALL (M)

1. Two hands.
2. RH and LH in C shape, fingers separated; fingertips touching.
3. At midline, touch fingertips of RH to those on LH.
4. Twice.

BOOK (30)

1. Two hands.
2. Both hands in open B shape.
3. At midline, palms together thumbs up. Open as if opening a book.
4. Once.

CARD(S) (45)

1. Two hands.
2. LH palm up, fingertips out; RH in C shape, palm down.
3. Slide C shape off left palm.
4. Once or twice.

COOKIE (60)

1. Two hands.
2. LH in open B shape, palm up, fingertips out. RH in C shape, palm down.
3. Place fingertips of right C in left palm and twist clockwise as if cutting out cookies.
4. Twice.

Level II

STUDENT'S NAME (M)

1. One hand.
2. RH in letter position for first letter of first name.
3. Bring to opposite shoulder.
4. Once.

BOOK (30)
1. Two hands.
2. RH and LH palms up.
3. In midline position, sides of hands touching with palms up at an angle like an open book.
4. Once.

BUS (M)
1. Two hands.
2. Hands in B position, palms facing each other.
3. Hands at midline, away from body. Rotate hands in opposite direction as if on steering wheel.
4. Two to four times.

CHAIR (49)
1. Two hands.
2. LH in C shape, RH in N shape.
3. In midline position. Hang N over left thumb.
4. Once.

COAT (57)
1. Two hands.
2. Both hands in A position.
3. Hands at shoulder level, thumbs touching shoulders. Bring hands simultaneously to midline. Thumbs touch at midline.
4. Once.

COLOR (CRAYON) (M)
1. One hand.
2. RH in closed G shape.
3. In midline position, move diagonally away from and towards body in zig-zag fashion from left to right as if coloring on a piece of paper.
4. Twice.

RADIO (198)
1. One hand.
2. RH in C shape with last two fingers closed, palm pointing right.
3. Place right thumb, middle and index fingers on right ear.
4. Once.

RECORD (RECORD PLAYER) (201)
1. Two hands.
2. LH in open B shape, RH in R shape.
3. LH at midline, palm up, fingertips out. R pointed down. Circle R clockwise over L.H.
4. Circle R twice.

SHOE(S) (222)
1. Two hands.
2. Both hands in S shape.
3. In midline position, both hands knuckles down. Strike together.
4. Two or three times.

TABLE (249)
1. Two hands.
2. RH and LH in open B shape.
3. At shoulder level, both hands palms down, tips out, index fingers touching. Draw apart and bring down palms facing each other, thumbs up.
4. Once.

Idiosyncratic Signs

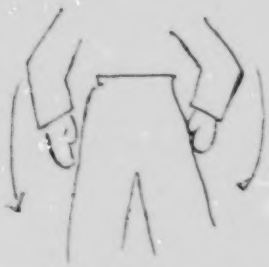
CRUTCHES (SLS, 111)
1. Two hands.
2. Both hands in A shape, thumbs up.
3. At midline, hands at respective sides of body. Bring hands forward as if using crutches.
4. Two or three times.

GLASSES (SLS, 34)
1. Two hands.
2. Both hands in G shape, right G pointing left, left G pointing right.
3. Both G hands in front of eyes. Move hands simultaneously to ears, closing G.
4. Once.

HEARING AID (SLS, 35)
1. One hand.
2. RH in closed G shape pointing left; RH in A shape.
3. Twist G forward. In continuous motion, bring A down to rest on chest, palm in.
4. Once.

WHEELCHAIR (M)

1. Two hands.
2. Both hands in A shape, palms in, thumbs pointing out.
3. At midline, extend hands out and down as if rolling a wheelchair.
4. Two or three times.



Level III

APPLE (10)

1. One hand.
2. RH in X shape.
3. Press knuckle of right index finger into right cheek and twist forward.
4. Once.

BABY (DOLL) (15)

1. Two arms.
2. Arms folded perpendicular to body, hands up.
3. Place right arm in left arm at waist and move left to right, as if rocking a baby.
4. Twice.

CAT (47)

1. One hand.
2. RH in 9 shape, palm facing out.
3. Place thumb and forefinger at right corner of mouth. Pull away toward right, indicating whiskers.
4. Twice.

DOG (M)

1. One hand.
2. RH in open B shape, palm down.
3. Slap RH to side of right thigh.
4. Once or twice.

DOOR (76)

1. Two hands.
2. Both hands in B shape, palms facing away from body at slight angle.
3. Place index fingers together then turn RH to the left, ending with palm up.
4. Once.

HAMBURGER (114)

1. Two hands.
2. Both hands in open A shape, cupped slightly.
3. Clasp hands together RH over left, then LH over RH, as if making a hamburger patty.
4. Twice.

HAT (116)

1. One hand.
2. RH in open B position, palm down.
3. Pat top of head with palm of RH, fingertips pointing left.
4. Once.

LIGHT (149)

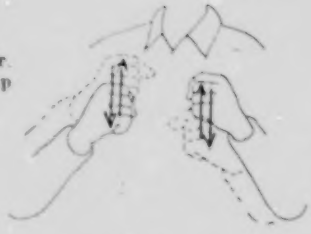
1. Two hands.
2. Both hands in flat O shape, fingers touching back to back, fingertips up.
3. At midline. Bring hands up to shoulder level simultaneously and spread fingers wide, palms in.
4. Once.

LOOK (149)

1. One hand.
2. RH in V shape, palm in.
3. Point fingertips to eyes, then twist to right and point out.
4. Once.

MILK (157)

1. Two hands.
2. Both hands in S shape, thumbs facing each other.
3. At midline, pump fists up and down in opposite directions (right up, left down; left up, right down) as if milking a cow.
4. Twice.



MONEY (159)

1. Two hands.
2. LH in open B shape, palm up, fingertips out. RH in flat O shape, palm up.
3. At midline, tap left palm with back of RH.
4. Twice.

NAPKIN (165)
1. One hand.
2. RH in open B, palm in.
3. Place fingertips on mouth. Make a small circle clockwise.
4. Once.

ORANGE (174)
1. One hand.
2. RH in C shape; S shape.
3. RH at mouth. Close fingers, "squeezing" into an S shape.
4. Once.

SANDWICH (212)
1. Two hands.
2. Both hands in open B shape, palms up, left fingertips pointing right, right fingertips pointing out.
3. Slide right B into left palm and close left thumb.
4. Once.

WATER (278)
1. One hand.
2. RH in W shape, palm facing left.
3. Tap lips with index finger.
4. Twice.

Situation - Specific Signs

BIRTHDAY (26)
1. Two hands.
2. Both hands in open B shape. LH palm up, fingertips facing right, right palm in.
3. Flip RH over and place back of hand in left palm.
4. Once.

BOY (32)
1. One hand.
2. RH in flat O shape.
3. Snap at forehead.
4. Twice.

CHRISTMAS (54)
1. Two hands (arms).
2. RH in C shape, palm facing left; LH palm down, fingertips right, arm perpendicular to body.
3. At midline. Place elbow of right C on back of left hand. Arc C from left to right.
4. Once.

CLEAN (55)
1. Two hands.
2. Both hands in open B shape.
3. At midline, left palm up, fingertips out; right palm down, tips left. Brush right palm across left as if wiping clean.
4. Once.

DIRTY (74)
1. One hand.
2. RH, palm down, fingers separated.
3. Place back of RH under chin, fingertips pointing left. Wiggle fingers.
4. Wiggle fingers several times.

FIRE (94)
1. Two hands.
2. Both hands in claw shape, palms up.
3. At midline. Move up, fluttering fingers.
4. Once.

GIRL (106)
1. One hand.
2. RH in A shape.
3. Place thumb on cheek and move down and away from chin.
4. Once or twice.

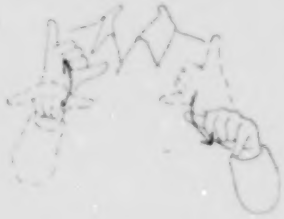
HALLOWEEN (113)
1. Two hands.
2. Both hands in H shape, palms in, fingertips up.
3. Place thumbs on mouth and move to ears.
4. Once.

HAPPY (115)
1. One hand.
2. RH in open B shape.
3. Place palm on chest and brush up and out.
4. Twice.

HURT (126)
1. Two hands.
2. Both hands in ONE shape palms in, tips facing each other.
3. Move back and forth toward each other. (Point to body part hurt.)
4. Twice.

MAD (151)
1. One hand.
2. RH in claw shape.
3. Hold in front of face and move out.
4. Once.

PLAY (187)
1. Two hands.
2. Both hands in Y shape, palms in.
3. At shoulder level. Twist back and forth.
4. Twice.



RAIN (199)
1. Two hands.
2. Both hands in claw shape, palms down.
3. Move hands up and down simultaneously.
4. Twice.

SAD (211)
1. Two hands
2. Both hands in 5 shape palm up, fingers slightly curved.
3. RH at face level, LH a little below RH. Drop both hands slowly to midline.
4. Once.

SCHOOL (214)
1. Two hands.
2. Both hands in open B shape. Left palm up, tips out; right palm down, tips left.
3. At midline, clap together.
4. Twice.

SICK (224)
1. One hand.
2. RH in FIVE shape, palm in.
3. Tap forehead with middle finger.
4. Once.

SIT (225)
1. Two hands.
2. Both hands in H shape, palms down, left fingertips slanted right; right fingertips slanted left.
3. At midline. Rest right H on left H.
4. Once.

STAND (238)
1. Two hands.
2. Both hands in open B shape, left palm up, fingertips pointing towards right. RH changes to V shape.
3. Stand open V on LH.
4. Once.

SUN (245)
1. One hand.
2. RH in C shape, palm facing right.
3. Place RH against right eye.
4. Once.

THANKSGIVING (253)
1. Two hands.
2. Both hands in open B shape, palms in.
3. Place fingertips on mouth. Arc out and down, then up again and out.
4. Once.

WET (281)
1. Two hands.
2. Both hands in FIVE shape palms in, fingers slightly curved.
3. Place right index tip on mouth then drop both hands into flat O shapes.
4. Once.

Common Gestures

BAD (15)

1. One hand.
2. Open B shape with RH. Palm in, tips up.
3. Place tips on chin, twist out and down.
4. Once.

COME (M)

1. One hand.
2. Open B, palm up fingertips out.
3. Start at midline. Bring RH up as if throwing hand over right shoulder.
4. Twice.

DOWN (77)

1. One hand.
2. RH in ONE shape, palm down.
3. Point index finger down.
4. Once.

GO (M)

1. One hand.
2. RH in open B shape, palm down, fingertips out.
3. At midline, fling RH upward, palm facing out, fingertips up.
4. Once or twice.

GOOD (197)

1. Two hands.
2. Both hands in open B shape palms in, tips slanted up.
3. Place right tips on mouth then move out and down placing back of hand in left palm.
4. Once.

NO (188)

1. One hand.
2. RH in closed O shape, last two fingers curled into palm.
3. Snap middle finger, index and thumb together quickly (like an abbreviated N and O).
4. Once.

UP (270)

1. One hand.
2. RH in ONE shape, palm out.
3. Point index finger up.
4. Once.

YES (291)

1. One hand.
2. RH in S shape.
3. Shake up and down.
4. Three or four times.

Home Signs

BED (21)

1. One hand.
2. RH fingertips up, palm towards left.
3. Place palm on right cheek and tilt head slightly.
4. Once.

BATH (19)

1. Two hands.
2. Both hands in A shape, knuckles in, thumbs up.
3. Move up and down simultaneously on chest in a scrubbing motion.
4. Twice.

BROTHER (35)

1. Two hands.
2. Both hands in L shape, thumbs up, left palm toward the right, right palm toward the left.
3. Touch forehead with right thumb then place right L on top of left L.
4. Once.

COMB (58)

1. One hand.
2. RH in claw shape.
3. Brush fingers through hair.
4. Twice.

FATHER (91)
1. One hand.
2. RH in FIVE shape, palm toward left.
3. Place thumb on forehead. Flutter fingers.
4. Once.

HAIRBRUSH (BRUSH HAIR) (M)
1. One hand.
2. RH in A shape.
3. Stroke right side of head.
4. Twice.

MOTHER (160)
1. One hand.
2. RH in open B shape, palm toward left.
3. Place thumb on chin and flutter fingers.
4. Once.

MUSIC (163)
1. Two hands.
2. LH in open B shape palm up, fingertips slightly toward right. RH in M shape, knuckles pointing out.
3. Swing RH from left to right over palm without touching it.
4. Twice.

PANTS (179)
1. Two hands.
2. Both hands in open B shape.
3. Place palms on hips and brush up toward waist.
4. Twice.

SHIRT (222)
1. One hand.
2. RH in L shape, palm in.
3. Grasp clothing with thumb and forefinger and shake slightly.
4. Twice.

SINK (225)
1. Two hands.
2. LH in C shape, fingertips to right, the little finger down. RH in S shape.
3. Place right arm in left C and slowly wiggle down (sink out of sight).
4. Once.

SISTER (225)
1. Two hands.
2. Both hands in L shape, thumbs up. Left palm toward right, right palm toward left.
3. Touch cheek with right thumb then place right L on top of left L.

SOAP (230)
1. Two hands.
2. Both hands in open B shape. Left palm up, fingertips out, right palm in, tips down.
3. Draw right fingers backwards across left palm ending an A shape, knuckles down.

SOCKS (230)
1. Two hands.
2. RH in S shape, palm down. LH in ONE shape, palm down, tip out.
3. Brush RH back and forth along side of left index finger.
4. Twice.

TELEVISION (T.V.) (252)
1. One hand.
2. RH in T shape; RH in V shape.
3. Form letters T and V in quick succession as if in one movement.
4. Once.

TELEPHONE (252)
1. One hand.
2. RH in Y shape.
3. RH at right chin. Place thumb on ear and little finger on mouth.
4. Once.

TOOTHBRUSH (36)

1. One hand.
2. RH in ONE shape, palm down, index finger horizontal, pointing left.
3. Rub index finger from left to right across teeth.
4. Twice.

Signs to Supplement Training Cues

AGAIN (3)

1. Two hands.
2. LH in open B shape, palm up; RH in bent B shape, palm up.
3. Arc RH to the left and place fingertips in left palm.
4. Once.

AM (6)

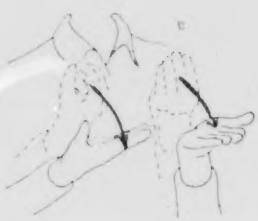
1. One hand.
2. RH in A shape, palm pointing to the left.
3. Place thumbnail of right A on mouth and move out.
4. Once.

DO (75)

1. Two hands.
2. Claw shape both hands palms down.
3. At midline, swing hands back and forth simultaneously from right to left.
4. Twice.

GIVE (106)

1. Two hands.
2. Both hands in O shape, palms up; LH a little ahead of RH.
3. At midline, move out, opening fingers.
4. Once.



I (128)

1. One hand.
2. RH in I shape, palm pointing to left.
3. Place thumb side on chest.
4. Once.

IS (131)

1. One hand.
2. RH in I shape, palm pointing to left.
3. Place little finger of right I on lips and move out.
4. Once.

ME (155)

1. One hand.
2. RH in ONE shape, palm down, pointing inward.
3. Touch chest with index finger.
4. Once.

MY (164)

1. One hand.
2. RH in open B shape.
3. Place palm on chest.
4. Once.

NAME (165)

1. Two hands.
2. Both hands in H shape; left palm right, right palm in.
3. Hit left H with right H.
4. Once.

POINT (188)

1. Two hands.
2. Both hands in ONE shape, right palm in, tipped toward the left. LH palm right.
3. Move RH toward and touch left index.
4. Once.

SHOW (223)

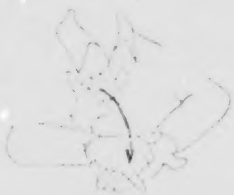
1. Two hands.
2. LH in open B, palm pointing to the right, fingertips up. RH in ONE shape.
3. Place fingertip of right index finger in middle of left palm and move both hands forward.
4. Once.

SIGN (M)

1. Two hands.
2. Both hands in ONE shape.
3. At shoulder level. Rotate hands away from and toward body, right hand starting first.
4. Twice.

THAT (253)

1. Two hands.
2. LH in open B shape palm up, fingertips right; RH in Y shape.
3. At midline, place knuckles of right Y on upturned left palm.
4. Once.



THIS (256)

1. Two hands.
2. LH in open B shape palm up, fingertips out; RH in ONE shape.
3. At midline tap LH with right index finger.
4. Once.

TO (259)

1. Two hands.
2. Both hands in ONE shape. LH palm pointing right, RH palm down.
3. Direct right index finger toward left and touch.
4. Once.

TOUCH (262)

1. Two hands.
2. LH in A shape, palm down.
3. Touch back with tip of right middle finger.
4. Once.

WANT (277)

1. Two hands.
2. Both hands in FIVE shape palms up, fingers slightly curved.
3. At midline, draw back to body.
4. Once.

WHAT (281)

1. Two hands.
2. LH in FIVE shape palm up, fingers slanted right. RH in ONE shape, palm down.
3. At midline, draw right index fingertip across left fingers.
4. Once.

WHO (282)

1. One hand.
2. RH in ONE shape palm in, pointing in.
3. Circle right index finger around mouth clockwise.
4. Once.

YOU (292)

1. One hand.
2. RH in ONE shape palm right, finger pointing out.
3. Point index finger at person being addressed.
4. Once.

YOUR (292)

1. One hand.
2. RH in open B shape, palm out.
3. Face palm directly at person being addressed.
4. Once.

A Simultaneous Communication Model[1]

MARGARET PROCYK CREEDON[2]

Simultaneous communication, the combination of manually signed English and speech, is an approach to working with individuals who perhaps do not hear, or produce any speech, or have autistic type behaviors. A simultaneous communication approach has been used with children functioning at all intellectual levels and chronological ages. We have used simultaneous communication in an intrusive or contact-oriented behavioral framework with autistic type children. These children initially made or sustained very little if any eye contact, had no language for communication, did not play appropriately with objects or interact with peers at age level.

The initial rationale for choosing a simultaneous language format was behaviorally based. It included a need for the most expedient form of communication that provided many opportunities for consequences to be attached, and communicative behaviors to be shaped from existing behaviors (hand posturing, finger twiddles). We can shape or mold a child's hand into a certain configuration so that she he sees and feels the sign as well as hears the word being said. This can be done on top of or next to the object being named. We cannot make certain sounds or words come out of the children's mouths on demand.

A simultaneous language format has been used in programs throughout the United States, Canada and Australia. From my experience as the director of the David School at the Dysfunctioning Child Center and consultant to other state agencies, I have developed the following framework:

1. *A communication model.* Communicating is an interactive process, a way of sharing with others in everyday human experiences.

2. *A systems approach.* A system which depends on the communication, needs, and goals of all its members including the children, teacher, and parents.

3. *An intrusive approach.* Contact is established and maintained physically, visually, and verbally. It is an attention focusing experience and hopefully it is a pleasurable experience.

4. *A behavior approach.* Behavioral techniques are used which stress positive reinforcement and small group instruction. This choice was made because it maximizes information to the child and increases the opportunity of the student to behave appropriately, to learn vicariously through teacher responses to others, and to receive praise as motivation to work.

5. *Sensori-motor integration activities.* The use of rhythm, movement therapy and sequenced developmental tasks are incorporated in all curriculum areas.

6. *A family program.* Parents and siblings need to interact in the classroom on a regular basis as well as in recreational and community settings.

Sign acquisition has followed a similar pattern among the children. In the early stages, the children were echopraxic. That is, they imitated and repeated all the hand movements and some body movements of the teacher. Children then began to inhibit this behavior or were guided to do so; it often occurred when a new concept or demand was presented. The children may have repeated a question but usually answered it in sign. As in the normal developmental language sequence, children began to label items, but were using signs and not words. Spontaneous combinations occurred and were expanded through chaining procedures with pivot words and phrases. Most importantly, they generated sentences spontaneously. In other words, they did not have a teacher model the correct sentence. A more complete record of sign use performance has been reported elsewhere (Creedon, Note 1).

Program intervention at an early age has resulted in the development of mouthing, verbal approximations and, for some, fluent speech without sign. Some children clearly have articulation difficulties and speak in a strained monotone voice.

I will briefly report observations of the developing speech process. (a) Spontaneous mouthing of single words began the sequence for most children. (b) Discrete vocal syllables were then heard usually with words that were signed with emphasis such as "stop" or with favorite words such as "car." (c) Before more complex words or combinations were heard, gross imitation of the intonation of a sentence followed in either a lower or higher pitched voice. (d) Word combinations came most clearly and spontaneously during singing and strong rhythmic activities. For the children attempting to vocalize or being intermittently successful in generating initial syllables, a "talking time" or speech oriented session was introduced to rehearse and shape sounds. Children who spontaneously generated speech and sign communication were delighted with their success and spontaneously began fading the use of sign. Until we better understand the relationship between sign, mastery of concepts, and speech, I would be reluctant to enforce "speech only" communications.

A more significant issue is that the children have been able to use a functional communication system which incorporates signs or manipulative symbols and learn more complex cognitive tasks. Children are learning signs for spatial relations (e.g. on, in, under), for classification systems (e.g. animals, toys), and for negation. This is the beginning of logical thought,

[1] Position paper for the Illinois Institute for Educators of the Severely and Profoundly Handicapped, Illinois Office of Education, March 11, 1977.

[2] Dysfunctioning Child Center at the Michael Reese Medical Center, 2915 Ellis Avenue, Chicago, Illinois 60616.

reality testing, abstract reasoning, and problem solving. The more quickly these students are able to exercise these functions, the more adept they will be in exploring their environment and learning by interacting with it.

An examination of I.Q. scores and estimated levels of functioning before and after the program yielded some potent educational implications in regard to teaching nonverbal children (Creedon, Note 2). Why this combination has an impact on the children's behavior and what modifications of the program interventions are needed are open to theoretical speculation. We must not only design the appropriate instruments for such study but also reconceptualize the processes to be examined. Simultaneous communication provides auditory and visual stimuli, as well as tactile information as we or the children themselves shape their hands. The execution of a sign has temporal, motor, and proprioceptive elements often with a rhythmic pattern. Meaning is conveyed by hand positions and movement in space.

Autistic patients have been described as preferring proximal receptors such as touch and as being more dependent than normal individuals on feedback from their motor responses to make sense out of their perceptions (Hermelin & O'Connor, 1970; Ornitz & Ritvo, 1976). Sometimes autistic children actively induce vestibular and proprioceptive stimulation; hand flapping, for example, may provide proprioceptive input. For children with such deficits, signing may be a more accessible process for learning. The echopraxis observations in sign behavior noted earlier, and the dependence on sign for new concepts in children beginning to speak, may relate to the child's needs in processing information.

King (1974) has suggested that we can intervene in the motor behavior of an individual who has defects in proprioceptive mechanisms. These defects result in a lack of sensory integration, perceptual constancy, poor body image, and inadequate motor planning. These all contribute to severe emotional stress.

Sign is a limited but controlled motor movement subject to refinement and associated with meaningful or needed objects. In sensory-motor integration therapy, it may be a very appropriate choice for children identified with such deficits.

Children deficient in skills usually handled by the brain's left hemisphere, including processing sequential auditory input, are usually better at tasks associated with the right hemisphere such as spatial, musical, and visually sequenced tasks. Rimland (1976) suggests that sign language capitalizes on the stronger half of the child's brain.

From a cognitively-oriented developmental viewpoint, language is acquired in a context of imitation. Piaget and Inhelder (1969) state that imitation makes its appearance through echopraxis. This process has been described as an assimilation of what the child sees to his own schemes and a triggering of these schemes. A child usually advances quickly to copying gestures that are new to him, but only if they can be formed by visible parts of his own body. This period is considered a prefiguration of representation; that is, during the sensori-motor period of development a kind of representation in physical acts occurs but not yet in thought. Note that until the child can form correspondences between visual and tactile-kinesthetic sensations, imitation to non-visible parts of the body are not extended. Correspondence is usually established through auditory indications. As imitation becomes generalized, it facilitates the child's knowledge of his own body in analogy with the bodies of others in forming one's self and others (Piaget & Inhelder, 1969).

How the children learn to use sign must be examined further. The process must be modulated to accommodate each child's state of receptivity.

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III. SERVICES TO SEVERELY HANDICAPPED STUDENTS

C. Service Delivery Systems

Editors' Comments

Service delivery systems for severely handicapped students must be comprehensive, well-organized, and efficient in order to provide the numerous services required by this population. Delivery systems must be evaluated on their direct and indirect instructional responsibilities, classroom organization and placement procedures, curriculum development efforts, ancillary service provisions, and parent and community education components. The articles that follow describe two Illinois programs serving severely handicapped students.

Brackman, Fundakowski, Filler, and Peterson describe a model demonstration project in the Chicago Public School system for severely/profoundly handicapped students 0-8 years old. The program is characterized by a transdisciplinary approach to service delivery in which teachers and parents are primary direct service personnel and ancillary disciplines (such as speech and language therapy, physical therapy, and psychology) have as their central responsibility, not direct contact with children, but rather the training of teachers and parents.

Connelly describes the services and curriculum areas addressed in a private, urban, residential program for severely handicapped children.

For additional descriptions of service delivery models for severely handicapped students, the reader is referred to:

Haring, N. G., & Bricker, D. Overview of comprehensive services for the severely/profoundly handicapped. In N. G. Haring & L. J. Brown (Eds.), *Teaching the severely handicapped*, Volume 1. New York: Grune & Stratton, 1976.

McKenzie, H. S.; Hill, M. G.; Sousie, S. P.; York, R., & Baker, K. Special education training to facilitate rural, community-based programs for the severely handicapped. In E. Sontag (Ed.), *Educational programming for the severely and profoundly handicapped*. Reston, VA: Council for Exceptional Children, 1977. Pp. 96-110.

Sherr, R. D. Public school programs. In M. A. Thomas (Ed.), *Hey, don't forget about me*. Reston, VA: Council for Exceptional Children, 1976.

Vincent, L. J., & Broome, K. A public school service delivery model for handicapped children between birth and five years of age. In E. Sontag (Ed.), *Educational programming for the severely and profoundly handicapped*. Reston, VA: Council for Exceptional Children, 1977.

The Chicago Early Childhood Education Project[1]

BARBARA BRACKMAN, GAIL FUNDAKOWSKI,
JOHN FILLER and CAROL PETERSON

The need for early and continuing educational intervention for severely handicapped children has increasingly become less of an issue during recent years. Only occasionally are heard the cries of the pundits who would have us believe that intervention is for naught. This quietening has not come about as the result of the unrelenting attacks of ardent interventionists. Rather it is the result of an impressive array of new data showing that significant gains in critical skill areas can be achieved with young handicapped children provided the intervention is early, comprehensive, consistent, developmental in nature, and data based. These factors seem to constitute the collective common denominator of the programs which have been submitted for validation by the Joint Dissemination Review Panel of the Department of Health, Education and Welfare and have, after critical review, been certified as successful (Note 1). These descriptors of success should come as no surprise to those who have for a long time argued for the logical necessity of their importance (e.g., Bricker & Bricker, 1973; Filler, Robinson, Smith, Bricker, Vincent-Smith & Bricker, 1975).

While we may safely use the adjectives "early, consistent, comprehensive, developmental and data based" to describe the Chicago Early Childhood Education Project (CECEP), we differ from most other early childhood education programs concerning both the specifics of curricula and the context in which curricula are taught. These differences result from our conceptual orientation, the severity of the handicaps of the children we serve and particular requirements of the setting in which we exist.

Conceptual Orientation of CECEP

Early trends to establish educational programs for severely retarded individuals have reflected an increasing awareness of the importance of early experiences upon later cognitive, social, and emotional adjustment. Comprehensive reviews of studies conducted during the 1930's and 1940's (e.g. Hunt, 1961) have demonstrated that complex forms of behavior are to a large extent shaped by environmental factors and do not occur solely as the products of genetic predisposition. More recently even such noted geneticists as Dobzhansky (1972) have pointed out that it is impossible to predict the ultimate form of behavioral structures given the full range of environments encountered by the organism. Currently there seems to be little disagreement among professionals who differ on conceptual persuasions as to the modifiability of complex forms of human behavior. Arguments, when they occur, are most often focused upon alternative strategies which might maximize the potential of each individual regardless of his genetic endowment.

Prior to 1950 the predominant tendency was to concentrate education of children who were labeled as profoundly retarded in large centralized institutions. As Filler et al. (1975) have suggested, educational provisions for the severely retarded child within the public school system are a relatively recent development and have occurred largely as the result of two factors.

First, as Baumeister (1970) and Wolfensberger (1969, 1970, 1972) have indicated, institutional placement has often been associated with negative effects upon the child. For example, decreased intellectual functioning as measured by IQ tests, particularly for young children, has been reported. In addition, a great percentage of persons ultimately discharged from institutions have failed to remain in the community because of inadequate skills and or extreme maladaptive and often stereotyped antisocial forms of behavior. These findings and others summarized by Filler et al. (1975) clearly suggest the desirability of the currently popular trend toward "least restrictive" approaches to habilitative programming.

A second factor which has led to attempts to establish community-based programs for severely/profoundly handicapped children has been the increased demands of parents who desire to keep their children at home, thereby necessitating community services. Legal battles initiated by parents have been fought and won (Cohen & DeYoung, 1973). Parental demand expressed through such collective organizations as the National Association for Retarded Citizens has led to the increased expenditure of local, state and federal funds for establishing programs for severely handicapped children. Currently, educational programs exist in every state. For the school-age child (age five and above), some of the problems of funds, space, teachers, transportation, etc., which had to be overcome before programs could be established, no longer exist. Sontag (1975) has suggested that the task at hand is insuring quality instruction within programs. Preschool programs for severely handicapped children, however, are not as numerous as programs for older children, and thus we are only beginning to learn the exemplary characteristics of such programs. As Sontag (1975) has implied, a current task for special education is to elaborate upon and extend early intervention programs for the severely handicapped child.

Programs for the preschool-aged severely retarded child which have demonstrated dramatic effects have often relied upon principles derived from the experi-

[1]CECEP is a collaborative effort of the Chicago Board of Education, the Illinois Institute for Developmental Disabilities and the University of Illinois. The project is funded as a model demonstration center by the Bureau of Education for the Handicapped, USOE.

mental analysis of behavior collectively referred to as the applied analysis of behavior. We feel the most innovative approach is one which incorporates task analysis (described by Brown, Bellamy & Sontag, 1971; Williams, Brown & Certo, 1975) with a theoretical framework to provide both the technology and the developmentally organized content of instruction. As described by Bricker (1973), and Filler et al. (1975), the major steps in this approach to intervention are:

1. Map the progressive sequence of attainments in particular skill areas as they are either known or hypothesized to occur developmentally. Reference to the literature on normal child development (e.g., Knoblock & Pasamanick, 1974) is often helpful.
2. Construct an initial visually displaced model for each area (i.e., motor, social, and each subarea of cognition and language). Most often these models take the form of lattices or flow charts (see Bricker & Bricker, 1973; Williams et al., 1975).
3. Test or assess the child (in a variety of contexts with a variety of materials) sequentially, beginning with rudimentary components. Assessment probes the developmental status of the child. Responses are judged by reference to pre-established criteria and testing continues until responses are judged as inappropriate or inadequate.
4. Initiate training at that point in the skill hierarchy where performance broke down utilizing information gained during previous test phases and or training phases to maximize the rate of acquisition.

It is important to realize that within such a framework the term *test* refers to careful observations of the child as he interacts, even in the most rudimentary fashion, with aspects of various settings, (i.e., at home, at school, in the class, on the playground, with teacher, parent or primary caretaker). Similarly, teaching or training describes a broad spectrum of activities, very different in form, which share the common property of increasing the probability that the desired form of behavior will occur and will be maintained under a variety of conditions. For example, for the young profoundly handicapped child who is capable but not visually attentive to his environment, the teaching or training may take the form of selecting objects which are interesting (i.e., are known to evoke such visual responses as horizontal and vertical tracking) and then arranging the environment (class and home) such that these objects are presented systematically to stimulate generalized horizontal and vertical tracking.

It should be obvious from the brief description of the approach presented above that an essential component is the inclusion of parents or primary caretakers in all aspects of the program. Literature accumulated during the last 15 years indicates that parents clearly are teachers (Filler & Bricker, 1976) and can be taught to act as educational change agents to decelerate inappropriate forms of behavior (Wahler, 1969) and to accelerate forms of behavior judged to be critical prerequisites to language (Filler, 1973; Filler, 1976). Further, the parent or primary caretaker is often the only person who can continuously represent the educational needs of the child. Thus it is critical to train parents to serve as educational change agents for the population of children often labeled profoundly handicapped. For these reasons we focus extensively upon parental involvement to create what Sontag (1975) has termed a true parent-professional partnership. Parents participate directly both in the initial stages of educational planning and in the direct intervention phases of the project. They are provided direct training in selecting and specifying objectives for their child as well as training in effective teaching strategies. Parents work directly with their child and other children in the classroom setting and also carry out educational programs at home. A task-oriented parent group, coordinated by a parent of the project children and a teacher, works to provide links between families for solving problems. Parents may choose whichever task force relates best to their needs. Some parents are working to set up a clothing exchange; others are working on a plan for evaluation of their children's educational program which includes input from parents; others work on transportation problems or a variety of other tasks.

Providing parents and teachers of the severely handicapped child with direct access to the specialized ancillary services often needed by these children is another important aspect of a total intervention program. As Bricker (1976) has pointed out, teachers and parents need to know how to seek out and use these resources. In CECEP parents and teachers are viewed as the primary direct service personnel. Input from physical and occupational therapy, pre-speech and feeding, language and other specialities are provided as *consultation* to the teacher and to the parent, who then carry out specific interventions with the child. Thus the CECEP project exemplifies a *transdisciplinary* approach to education. Further we utilize an indirect consultative model for specialized ancillary services. In order to insure that parents and or teachers are able to effectively carry out specialized techniques, it becomes necessary for ancillary staff to carefully train and to document their proficiencies. In order to aid in this process we have developed a systematic plan for training and an evaluation rating procedure for determining the effectiveness of training efforts. First the ancillary staff person carefully specifies each component of the particular technique he or she wishes to teach the parent or teacher in behavioral terms. The resulting sequences of behaviors are then discussed with the teacher or parent and clarification is added where necessary. Next each behavior in the sequence is demonstrated or modeled for the parent or teacher and the parent or teacher, under the supervision of the responsible ancillary staff person, then actually carries it out with the intended child. During each of these instructional sessions the therapist indicates on a Parent/Staff Training Form what input was necessary to get the parent or teacher to correctly

perform each component behavior. This procedure continues until no correction is necessary. At that point the parent or staff person is "certified" to perform the activity without the presence of the ancillary specialist. Periodically, checks are made to determine if skills learned are being maintained and whether or not they are generalized to other children with similar problems.

A sample Parent Staff Training Form is in Appendix A. Included on the form is the sequence of appropriate teacher behaviors necessary to teach an athetoid child to move from a sidelying position without assistance. The type of correction which was given to teach each step is indicated. On the second day of instruction the teacher achieved criterion of "No correction necessary" for each step and thus went on to carry out the program without the presence of the occupational therapist who taught her until the child reached the criterion specified in his educational program for that particular motor skill.

Population Served by CECEP and Location

CECEP serves 25-30 severely and profoundly handicapped children whose chronological ages range from six months to eight years. All of these children are severely profoundly handicapped. Each has been diagnosed according to the usual criteria as severely or profoundly mentally retarded. Ninety percent have additional severe handicaps such as visual, hearing and or motor impairment. Seventy percent have never received educational programming before their inclusion in CECEP, and only two were previously students in public school programs.

We are located in a densely populated low income area of the city of Chicago. Thus we have strived to develop a service delivery system which takes into account the accompanying complications of poverty, multi-lingualism and multi-culturalism. As a special school site we relate to a large public school system which transports children from all sections of the city to the center. The particular problems we have to deal with as a result of our urban setting have been described before (Filler, 1976). They include serving non-ambulatory children in a multi-story facility, security for staff and families served, and coordination of transportation (we use buses and cabs), to name a few.

Service Options

A number of service options are provided to families. Educational programming may be carried out in the home, in the facility for a half day or in the facility for a full day. Some families may receive a combination of the above. For a very young child or a physiologically fragile child, a weekly home visit and two facility-based sessions may be most appropriate. These options are necessary to meet the diverse needs of the families we serve.

Some severely handicapped children are integrated with less handicapped children. The project is housed within a university-affiliated facility which provides an early intervention program for high risk infants as well as mildly, moderately and severely handicapped children 0-3 years. Through the cooperative efforts of CECEP and the Early Intervention Program of the Institute for Developmental Disabilities, severely and profoundly handicapped children are integrated with less handicapped children and are thus prepared for less restrictive environments in the future.

Classroom Model: The project has borrowed, assimilated and modified many ideas from other programs. One of the most important ideas is that of the teacher as manager, which was developed by Teaching Research Infant and Child Center (Baldwin, 1976). Another principle we share with Teaching Research is that we often use a one-to-one model for our instruction. Keep in mind this one-to-one model as the teacher as manager is described.

Much of the actual child-adult contact in our rooms is by nonprofessionals. We have salaried teaching assistants, volunteers, students and parents working with the children. Teacher time is spent in training, supervision, programming and evaluating. We feel that using the teacher's expertise to supervise the program, while paraprofessionals do the training, is a necessity.

The teacher's role as manager includes the primary responsibility of developing individual programs for each child, and seeing that they are carried out on a regular basis. For us this means that 80 percent of the child's program must be run weekly. To meet this objective, the teacher must provide training for the people who will be carrying out the program. Currently this training takes place inservice and is individualized for each person. One of the goals of CECEP is to develop a training sequence which all classroom volunteers could go through and reach criterion at their own pace before coming into the classroom.

Parents are trained by the teacher and go through the same training as the volunteers and students. Basically the training is limited to carrying out instructional programs including taking data and arranging appropriate antecedent and consequent events. There are many levels of skill and interest within our group of parents, students and volunteers; however, we have found that each can be trained to assist the classroom program.

Initially the experience of using assistants and volunteers to do the teaching can be frustrating for the teacher. Usually, the greater education and experience of the teacher means that he/she might move a child through the programs more efficiently. But the teacher cannot teach all the children all the time so the time spent in training other people to do the teaching is indeed efficient when we look at the progress of the entire class.

Although paraprofessionals have most of the actual contact with the child, the teacher, in collaboration with assistants, plans each lesson down to details such as materials, verbal cues and positioning of the child. We will discuss details of individual planning

later, but we want to emphasize the teacher's responsibility for diagnosing each child's problems, prescribing a program and evaluating the effectiveness of the program. We also want to emphasize that although the teacher manager has reduced contact with the children, he or she still interacts with each child regularly. The reasons for this are obvious — one cannot effectively prescribe for a child unless one has "hands-on" experience with him. The teacher manager tries out many new programs with the child to determine their effectiveness and to model for other staff. When the teacher has spare time she provides an extra hand to insure that each child receives his daily programming. And last but certainly not least, 90 percent of the reward in teaching is interacting with kids.

The teacher manager's role also includes organizing the daily routine, assigning teaching and preparation duties for activities such as music, and assigning non-teaching duties such as snack and clean up. The teacher manager also coordinates schedules with ancillary personnel.

The role of the salaried assistant is probably apparent from previous discussion. He or she is responsible for carrying out programs with individual children. He or she is also responsible for conducting large group activities such as music or free play in addition to other nonteaching activities. We do not put limits on the children, nor on teaching assistants and volunteers in the classroom. As an assistant becomes familiar with a child he or she might begin writing programs. Volunteers and parent roles correspond with that of the assistants. Following training they carry out programs or plan large group activities. They also serve the necessary function of keeping "on task" all the children who are not receiving individual training.

The child's individualized instructional programs are kept on a clipboard in the classroom. We have adapted the clipboard method used at Teaching Research in which any person with a few basic teaching skills can walk in, pick up a clipboard, select a program and teach it to the child. The lesson plans kept on the clipboard are written in great detail to make this possible. The teaching strategy we use is that one adult conducts programs with a child regularly, until the child reaches criterion. Then the teacher programs for that skill to be generalized to other persons, materials and settings.

To keep track of what needs to be done we have a cover sheet which lists the program for each day of the week. The trainer may choose a program in any order, and turn to the lesson plan. Plans are filed by the major curriculum areas: social, cognitive, language and motor. After the program is completed the trainer initials the appropriate box indicating what was taught that day. There is a code to indicate which programs are to be conducted weekly and which are a top priority for any particular day. Most children have more programs than can be carried out in a day. Because of variables such as children's absences and irregular volunteer attendance we find we can give children more individual attention on some days than on others. However, each child must have a regular amount of programs run daily even on busy days and each child must receive training on all programs on a regular basis (a minimum of 80% completed during each week).

Following the cover sheet on the clipboard is an *information sheet* on the child. It lists things he likes and things he doesn't. The function of the information sheet is to prevent the trainer from using tickling as a reinforcer with a child who hates to be touched. The information sheet also lists precautions such as what to do if the child has a seizure.

Instructional programs are filed after the information sheet. They follow a basic three-part format listing cues the teacher is to use, responses expected from the child (both correct and incorrect), consequences to be applied after the expected responses, and how data are to be recorded. Also listed are a description of setting, materials and any preparatory activity such as positioning or relaxation techniques which the teaching staff have been trained to carry out.

Evaluation of instructional programs is continuously conducted. At the most basic level the teacher and trainer evaluate pupil progress daily. Behind each lesson plan in the child's clipboard is a data sheet. The form is self-graphing so progress can be determined instantly. Although we collapse data weekly on separate graphs, the data sheet gives us the advantage of visualizing progress as soon as the lesson is completed. The teacher checks the data daily and makes decisions on moving on to the next program step or revising the current program. The data the teaching staff collect are discussed at regular staff meetings where each child's programs are presented.

The Home Based Program: The home based program is another of the options offered to our families. With this option, the youngest and most fragile children are offered three educational opportunities per week. One of these is a group meeting with several parents and their severely handicapped children. The other two meetings can be either two home visits or a facility visit and a home visit.

The group meeting serves several functions. First, ancillary staff provide both parents and the educational staff with their specialized input. Knowledge imparted often consists of posturing and handling techniques which enhance the child's movement. Facilitation of the child's movement aides growth and development in other areas, e.g., feeding and pre-speech, cognitive and social. Parents of young severely motorically impaired children need to learn and adjust to the idea that their child requires help in all curriculum areas. For example, many parents are unaware of their child's cognitive needs. Further, they need help in establishing an adaptive social interaction with their child. Most helpful at first is the opportunity to interact with parents of other handicapped children.

Instructional programs carried out in the home are similar to those carried out in the all day and half day classrooms. Teachers, assistants and ancillary staff may make home visits. Each is prepared to provide whatever specialized techniques are necessary to carry out the program. The additional benefit of home visits is that the teacher has the opportunity to see the child in his/her most familiar environment. This allows the teacher to adapt programs for this most important setting. Teachers make a great effort to utilize materials available in the home. This situation also provides a good opportunity to work closely with the parent. As always, it is very important to write programs that are consistent with the parents' priorities. If our goal is that the family support the severely handicapped child in the home, then we must move the child toward greater independence in daily living and provide the family with the assistance it needs during these crucial early years.

Summary

The Chicago Project provides a model education and ancillary service delivery system for severely profoundly retarded, multiply handicapped young children, 0-8 years of age. Educational services are provided to children utilizing a transdisciplinary team concept. Physical therapists, occupational therapists, special education teachers, speech and hearing clinicians, paraprofessionals and parents work together to provide maximum input of comprehensive instructional programming for each child. The primary goal of the project is to provide exemplary educational programming and to adapt existing assessment, curricula and evaluation techniques for young severely profoundly retarded children. Emphasis is placed upon the maintenance of a multi-faceted relationship with parents. This relationship includes both parent participation in the planning, implementation and evaluation of the services provided to the child. Intervention may begin at birth, and a number of service options are offered to families including programs in the home.

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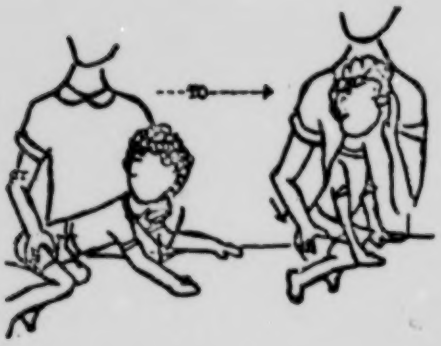
APPENDIX A

Sample Parent/Staff Training Form

Date: 1/21/77
Parent/Staff: Gail
Child: Chris
Learning Area: Motor
Activity: Sidelying to sitting, from L side
Instructor/Rater: Rita
Ratings: 1. No correction necessary
2. Verbal suggestions
3. Verbal suggestion accompanied by some physical correction
4. Necessary to re-demonstrate

Sequence of behaviors	Ratings		Observation
Date	2-1	2-2	
1. Teacher's position — in back of child	1	1	

2. Child's position — left lying 1 1
3. Teacher's control —
   a. teacher places her one hand on child's opposite shoulder 1 1
   b. control shoulder resting on mat by slowly pushing up; control hip by pulling towards you and down. Control simultaneously. 1 1
   c. facilitate trunk rotation (twisting around) 2 1
   d. as child assists from sidelying to L sidesitting, gradually release control first from the shoulder. 1 1
4. Anticipated response —
   a. child keeps both hands down on floor in front so that he must push on his hands and assist in coming up to sitting. 2 1
   b. If 4a does not occur, place hands down on mat and give approximation (push weight) from the shoulders through the elbows and wrist, for more tone. Maintain previous controls. 3 1



Misericordia Homes North and South

SISTER ROSEMARY CONNELLY

Misericordia Home takes its name from the Latin, *misericordia*, meaning *heart of mercy*. This title was chosen in 1921 when George Cardinal Mundelein founded Misericordia Hospital as a maternity hospital to serve the needs of unmarried mothers as well as poor women unable to afford adequate obstetrical care. The new hospital operated under the auspices of Catholic Charities of the Archdiocese of Chicago and was staffed by the Sisters of Mercy.

Since a number of the married women as well as those who were unwed put their children up for adoption, Misericordia Hospital also provided care for these infants while they awaited placement. Some of the children were not adoptable for various reasons, usually some kind of physical and or mental handicap. These children remained under the care of the Misericordia Hospital staff until they were two years old. Then they were transferred to other agencies of Catholic Charities.

During the first thirty-three years of operation, over 11,000 women received maternity care at Misericordia Hospital. Most of their children were placed in adoptive homes.

In 1954, Misericordia changed its emphasis. From now on only mentally handicapped children would be cared for in its nurseries. Misericordia would continue to provide prenatal care for unwed mothers; however, they would now deliver their babies in area hospitals rather than at Misericordia. Healthy infants awaiting adoption would be cared for at St. Vincent's Orphanage, another agency of Catholic Charities.

As time passed an expansion program became a necessity in order to provide services for a growing number of mentally handicapped children. Early in 1961 a two-story addition opened. This facility increased Misericordia's capacity to 136 children. The thrust at this time however, was on custodial care.

In 1969, programs were introduced for the children. These included Montessori classrooms, training in self-help skills, speech therapy, physical therapy and occupational therapy. All children who were physically able participated in programs geared to their developmental level. As the years passed, pre-speech and feeding therapy, music therapy and a language-communication program were added. In November 1971, the services for unwed mothers were discontinued at Misericordia and assumed by another agency of Catholic Charities.

Even though a significant number of the children residing at Misericordia Home were healthy and ambulatory, the facility itself was licensed as a skilled nursing home stressing services to children suffering from physical disabilities as well as mental retardation. This situation prompted Misericordia's administration to consider the possibility of opening a second facility which would service the needs of active, ambulatory children. It did not seem just to place these healthy children in a skilled nursing facility when they did not need that level of nursing care, simply because they were severely and profoundly mentally retarded.

Several years of planning and preparation culminated on March 29, 1976, when Misericordia Home North opened its doors in what had been a part of the Angel Guardian Orphanage at Devon and Ridge Avenues on Chicago's far North Side. Extensive renovation had transformed two buildings of the Angel Guardian Orphanage complex into home-like living and learning space for sixty-six mentally retarded children. These children participate in a variety of programs including language-communication, classroom, training in self-help skills, physical education and religious development. Misericordia Home North is licensed as a child care facility by the Illinois Department of Children and Family Services.

The opening of Misericordia Home North necessitated extensive restructuring at the original facility, now known as Misericordia Home South. Continuing as a skilled nursing home, Misericordia Home South provides services to non-ambulatory mentally retarded children whose medical problems require skilled nursing care. Children are placed in one of four units (Cerebral Palsy, Skilled Care, Basic Development and Motor Development) depending on their individual needs. In addition to skilled nursing care, pre-speech and feeding therapy; occupational therapy; physical therapy; language development and a classroom program are integral parts of Misericordia Home South's total program.

Misericordia Home South is licensed as a skilled nursing facility by the Illinois Department of Public Health. The children residing at Misericordia Home South are placed in one of four service units. They consist of skilled care, cerebral palsy, basic development, and motor development. Each unit is headed by a Service Coordinator who oversees the total plan of care for each child in that Unit. She is responsible for integrating the various aspects of the child's total program.

Misericordia Home South accepts children who in addition to mental retardation also display significant medical problems whose management requires skilled nursing care. Children seeking admission must be under three years of age and non-ambulatory. Currently children may remain at Misericordia Home South until they outgrow the facilities.

Misericordia Home South operates out of the philosophy of total programming. A program is not something in which a child participates X number of hours a day, Monday through Friday, but a milieu in which

he she lives 24 hours a day, seven days a week. Every situation is a potential learning situation for a child at Misericordia Home South.

The staff, then, is challenged to provide both a process and an environment which will stimulate the child to develop and integrate new behaviors, thereby gaining independence as well as mastery over his/her environment.

The population served by Misericordia Home South represents a broad spectrum of diagnoses. These children are non-ambulatory for the most part, dependent for Activities of Daily Living and only a few are able to communicate their needs. These disabilities are further complicated by interfering behaviors such as self-abuse, ruminating, autistic tendencies and medical problems such as severe seizure activities.

In order to determine a baseline against which developmental progress will be measured, careful preliminary assessment is necessary. After extensive exploration, the staff has chosen the *Early Intervention Developmental Profile* developed by an interdisciplinary team at the University of Michigan. This particular tool measures the child's developmental level in months along with his her strengths and limitations.

Although each of the four units appears to stress one kind of development, in reality though, each unit encompasses all developmental areas because of the interdependence that exists between the various developmental sequences.

To provide this kind of comprehensive programming the children attend sessions in an activity center located in the facility, but outside the regular nurseries and playrooms. Program content covers the following areas: (1) gross and fine motor skills, (2) receptive and expressive language skills, and (3) cognitive and perceptual motor skills.

Non-professional staff (Child Care Workers) play a vital role in Misericordia Home South's programming efforts. In addition to meeting the child's primary care needs, they also carry out the various programs under the direction of the Unit Coordinators and other significant professionals.

DEPARTMENT OF COMMUNICATIVE DISORDERS

Effective communication involves a receptive component which permits the individual to decode or understand the speech or message of others and an expressive component which allows the person to encode or express his/her thoughts in a form understandable to others. The goal of the Communicative Disorders Department at Misericordia Home South is to develop whatever communicative abilities the individual child possesses by establishing a systematic approach to teaching those skills that will eventually help the child reach his her maximum potential for communication.

Pre-Speech and Feeding Therapy Program

Capitalizing on the relatively recent insight of the profound relationship between speech on the one hand and breathing and eating on the other, Misericordia's Communicative Disorders Department has developed a comprehensive pre-speech and feeding therapy program.

Since speech utilizes the same anatomical and physiological mechanisms as breathing and eating, any abnormality in these functions is bound to affect speech. The first step, then, in any effort to facilitate adequate speech would be to attempt to correct or modify those abnormal sensori-motor problems that hinder the development of pre-speech and feeding skills.

The objectives of the pre-speech and feeding therapy program are as follows.

1. To decrease abnormal postural tone and movement patterns during feeding and phonation.
2. To decrease oral and facial sensitivity and inhibit abnormal oral reflexes.
3. To decrease lack of coordination between jaw, lips, tongue and soft palate in order to facilitate the activities of sucking, biting, chewing and swallowing.
4. To decrease abnormal breathing patterns.

The children included in the pre-speech and feeding therapy program usually display one or more of the following sensori-motor problems: (a) abnormal postural tone which interferes specifically with feeding, (b) oral and facial hypersensitivity, and (c) abnormal oral reflexes such as bite reflex, hyperactive gag, retention of reflex sucking pattern, retention of rooting reaction, and jaw and tongue thrusting.

The program utilizes a two-pronged approach to alleviate these difficulties. These include the use of specialized techniques during the actual feeding process as well as individual therapy sessions.

Central to the program is the introduction and use of specialized feeding techniques which help to overcome some of the problems (gagging, spitting, choking) that brain damaged children experience during feeding. A careful consideration of each child's physical and mental condition leads to the formulation of a *Prescriptive Feeding Plan* which summarizes the following factors:

1. Assessment
2. Long-term Goals
3. Immediate Objectives
4. Methods
5. Materials
6. Outcome

Since continuity of treatment is essential if any progress is to take place, the *Prescriptive Feeding Plan* is mounted on the child's bed along with photographs of the child showing his her proper feeding position. This system assures that the various staff persons on the different shifts follow the same feeding procedures.

To assure the success of the pre-speech and feeding therapy program it is essential that staff persons ren-

dering direct care to the child be trained in the various feeding techniques. Therefore, the feeding program coordinator spends a significant portion of her time instructing and supervising the residential care personnel (child care workers) on the floors during feeding times. She also conducts regular in-service sessions for the residential care staff. Some of these sessions include analysis and discussion of actual feeding sessions which were videotaped as well as live and videotaped individual therapy sessions.

Depending on the child's needs, individual therapy sessions of thirty minutes each may be prescribed from one to five times per week. These are conducted by the feeding program coordinator.

The feeding program coordinator works closely with the residential staff. She arranges all meetings and in-service sessions for the child care workers through the unit coordinator. The feeding program coordinator is also available for consultation when feeding problems arise.

The goal of the speech and language development program is to lessen each child's dependence by providing him/her with those skills that will maximize his her ability to communicate. The specific objectives include the following.

1. To increase the child's attending behaviors (*eye contact, awareness of his her surroundings, imitative abilities etc.*)
2. To increase the quality and quantity of vocalization and babbling
3. To teach the child the appropriate functional use of objects
4. To teach the child concepts appropriate to his her maturational level

Many different language programs and readings in current literature and research will be used in compiling Misericordia's own *Syllabus of Activities* during the current year.

Evaluation is an important component of the speech and language development program. The purpose of the evaluation is first to obtain sufficient information to determine whether a problem actually exists, the nature and severity of the observed disorder and any recommendations for therapy, referrals and counseling.

Medical history is reviewed first. Then the general level of language functioning is determined by combining information obtained from an interview employing the *Receptive Expressive Emergent Language Scale* (Bzoch & League, 1971) along with direct examination of the child using various tests.

Tests will be readministered at appropriate monthly intervals. The length of time between evaluations will vary with the age, severity of disorder and progress of the child. Written reports on individual children are submitted by the speech therapist three times yearly.

The speech therapist will arrange all meetings with the child care workers through the unit coordinator. The unit coordinator keeps the speech therapist informed of the children's progress by submitting written reports four times a year. The unit coordinator plans a meeting with the speech therapist if any problems or new developments occur for any child in the unit.

The speech therapist meets with the child care workers for in-service and shares any new developments concerning the child's programming with them. Lists are posted in the rooms showing the signs or words that the children know. These are up-dated whenever a child learns a new word or sign.

The programs available to the children who reside at Misericordia Home North are organized under three general headings. They consist of the learning center, the language-communication program and the training program.

However, since Misericordia Home is concerned about the child's total development, it is impossible, in reality, to view each of these program areas as separate entities totally unrelated to one another. Nevertheless, for the purposes of this presentation we will try to look at them individually, aware though, that there are numerous areas of overlap and integration.

Children seeking admission to Misericordia Home North must be at least four years old, ambulatory, but not older than thirteen when accepted. At the present time a child may remain until he/she reaches eighteen years of age. Children who require one-to-one supervision or who are severely emotionally disturbed are excluded. Children need not be verbal to be admitted.

LEARNING CENTER

The goal of the Learning Center is to enhance and develop each child's adaptive and learning capacities within the context of an accepting, supportive and happy environment. The Learning Center staff strives to create an educational environment that will offer each child opportunities to increase his her level of functioning in the areas of sensory development, sensori-motor integration, self-awareness, gross and fine motor skills, language cognition and community awareness. Self-help, home living and pre-vocational skills are included when they are relevant to the classroom setting. Usually, though, these activities are carried on in the Training Program. The Learning Center also strives to create a motivational environment that fosters and reinforces self-actualization, self-worth and success.

All the children at Misericordia Home North participate in the Learning Center's programs. Each child is placed in a classroom according to his her level of functioning and will be involved in some of the activities listed below depending again on his her abilities and needs. The educational activities include:

(A) Visual, Auditory and Tactile Training
(B) Mirror Exercises — *emphasizing body parts, feelings etc.*
(C) Gross Motor Activities — *physical education program with classroom followup*
(D) Fine Motor Activities — *placing pegs, stringing beads etc.*

(E) Participation in Language-Communication Program — *with classroom followup*

(F) Attending Activities — *imitation, cause and effect, colors, counting and some functional academic skills*

(G) Language Experience Trips into the Local Community

Each teacher keeps a progress record on each child in his/her class. Weekly faculty meetings give teachers an opportunity to exchange views and share ideas. Each teacher meets weekly with the Director of the Learning Center to discuss any questions or problems he/she may have. The Learning Center staff consults frequently with the language-communication department personnel.

The Learning Center staff works closely with both the language-communication and physical education staff. Members of both these departments attend faculty meetings frequently. Residential staff (total care coordinators) have also participated in faculty meetings. At present a process is being developed to allow each total care coordinator to consult weekly with the teachers of each child in his/her Unit. Residential staff (child development workers and residential workers) have frequent informal contact with teachers when they bring the children to the classroom and pick them up after school.

One full day each month is allotted to in-service. This may include special programs on site as well as observations of programs at other facilities. Staff members are encouraged to attend workshops relevant to the education of severely and profoundly retarded children.

The Learning Center Program is in operation five days a week (Monday through Friday). There are two sessions daily, 9:30-12:00 and 1:30-4:00. Half of the children attend class in the morning. The other half attends in the afternoon. Children participate in the training program during part of the half day that they are not in the Learning Center.

Volunteers are recruited from the local community. Fifteen are serving at the present time. They assist in the Learning Center mornings, afternoons or both. Three Comprehensive Employment and Training Act (C.E.T.A.) workers come five afternoons a week.

LANGUAGE-COMMUNICATION PROGRAM

Initiated in September, 1975, the language-communication program is now an integral part of Misericordia Home North's total program. The overall goal of the Language-Communication Program is to enhance each child's ability to communicate his/her needs and feeling to others and thus to reduce the child's level of frustration and increase his/her independence.

Presently the language-communication department staff has divided the children residing at Misericordia Home North into three levels of functioning. These are:

Pre-Verbal Level — *These are children who presently display minimal attending behaviors (eye contact, imitation skills, attention span, body contact, self-control).*

Verbal Receptive/Limited Expressive — *These children understand words and/or phrases and sentences when someone speaks to them but they do not have intelligible speech yet.*

Verbal Receptive/Verbal Expressive — *These children demonstrate a consistant ability to understand and use speech as a means of communication.*

The language-communication program makes use of a variety of activities in order to increase each child's capacity to communicate. Some of these activities are as follows:

1. Individual Language Therapy *directed toward prelinguistic development (eye contact, imitation skills etc.).*
2. Small Groups *of structured lessons on language development and use of Sign Language and other alternatives to speech.*
3. Weekly Language Experience Trips *integrated with the language communication aspects of the Learning Center's program.*
4. Individual Speech and Language Therapy *for children functioning at the verbal expressive level.*
5. Auditory Training *in the classroom.*
6. Annual Hearing Evaluations.

Ongoing evaluation is a vital part of the language-communication program. The staff meets weekly to share ideas, resources and insights and to critically analyze the operation of the program. The language-communication department also meets monthly to prepare lesson plans and to arrange the language experience trips. The department schedules frequent feedback sessions with both the Learning Center staff and the total care coordinators to permit all these groups (Learning Center, language-communication staff and residential staff) to interact and to better integrate their respective programs.

The language-communication department's initial emphasis and energies were directed toward the initiation of a language-communication program in the Learning Center. Substantial effort was put into working with the teachers to help them integrate language-communication development into their classrooms.

At the present time plans are underway to in-service the residential staff in language-communication techniques. These persons (child development workers and residential workers) are directly involved in the training program and will be able to implement language-communication development within that context. Residential staff working after school and in the evenings will also be included in this in-service.

Basic sign language classes for parents began March 1, 1977. The class is open to parents, family, and friends of the children. The signs are tailored to the present needs of the children.

All of the children at Misericordia Home North

participate in the following activities of the language-communication program: language experience, group auditory training, and annual hearing evaluations. Twenty-six children receive speech and language therapy on an individual basis. Another ten children participate in small group sessions for work in beginning sign language. Children move in and out of these groups as their needs change.

TRAINING PROGRAM

The goal of the training program is to lessen each child's dependence by providing an opportunity to develop those skills that will enable the child to meet many of his/her own needs. Organized in the fall of 1973, the training program attempts to provide an atmosphere that will foster the development of a positive self-image in each child by enabling him/her to achieve some degree of mastery over his/her environment. The program now includes all of the children residing at Misericordia Home North.

Initially the program focused on primary self-help skills. However, the scope of the training program has now been broadened to include the following areas:

1. Dressing and advanced dressing skills
2. Home care and cleaning skills
3. Meal-time behavior
4. Bathing and hygiene
5. Community and environment
6. Basic food knowledge and preparation
7. Leisure time activities
8. Social behavior and manners

The training program's format is quite flexible. Activities range from highly structured seat work exercises to the more informal practice of daily housekeeping chores such as making beds and putting clothes away. Lessons and short term objectives are drawn from the present needs and interests of the children. Because of the wide range of individual needs and interests, content of the lessons covers a broad spectrum of topics from practicing correct methods for brushing teeth on a large plastic model to learning how to follow the recipe, step by step, to prepare a grilled cheese sandwich.

The training program is carried out by the residential staff (Child Development Workers and Residential Workers) under the supervision of the training program director. Formal program sessions are 10:00-11:30 AM and 1:30-3:00 PM, Monday through Friday. Children participate in the training program sessions during that segment of the day (morning or afternoon) that they are not in the Learning Center. Group size ranges from four to six children.

While formal training program sessions are only an hour and a half in length, implementation of the skills presented during this relatively short period is the work of the entire day. Residential staff must be sensitive to the learning potential of every situation for the child. They must take advantage of seemingly insignificant occurrences to reinforce skills that may have been presented in a much more structured context earlier.

The Director of the training program meets periodically with the Learning Center Director to share insights and ideas as well as goals and objectives. Plans are currently underway to in-service residential staff in language-communication techniques. This was discussed in greater detail under the language-communication program.

REFERENCE

Bzoch, K. R. & League, R. L. *Receptive Expressive Emergent Language Scale*. Gainesville, Florida: Tree of Life Press, 1971.

IV. CONSIDERATIONS FOR SECONDARY-LEVEL AND VOCATIONAL PROGRAMMING FOR SEVERELY HANDICAPPED STUDENTS

Editors' Comments

While there is no doubt that recent years have seen noticeable improvements in both the quantity and quality of educational services available to severely handicapped students, most efforts have been directed toward services to very young or elementary-age children. Little energy has been expended on the development of a systematic, comprehensive continuum of services for secondary-level or adult handicapped. While services for this age group have been relatively ignored, and expanded and refined technology and the current emphasis on deinstitutionalization make it clear that secondary-level and adult severely handicapped will soon enjoy increased community and professional attention.

The articles in this section represent the work of those on the forefront of service delivery to secondary age and adult severely handicapped. The papers by Gold and by Brown, Nietupski, and Hamre-Nietupski represent important ideological statements. Gold's work focuses more on vocational integration and skill upgrading while Brown and his colleagues delineate issues which pertain to the entire range of services to severely handicapped and which are particularly germain to the design of programs for adult and secondary-level students. The assumptions underlying the "criterion of ultimate functioning" in fact serve as the basis for the task analytic, criterion environment approach to curriculum development discussed earlier by York and Williams.

Bellamy, Inman, and Schwarz move from ideology into practice and review the techniques which have been used to train complex, economically viable vocational skills in severely handicapped workers. In the final paper, Carney, Menchetti, and Orelove present a task analysis and program to train moderately retarded adults to independently use a mass transit system. Their work both highlights the complexity of the process of training community survival skills and provides a prototype for those interested in training community mobility or other community-based skills.

The reader who is interested in additional information on techniques and models for serving secondary-age and adult severely handicapped learners is referred to the following sources:

Bellamy, T., Peterson, L., & Close, D. Habilitation of the severely and profoundly retarded: Illustrations of competence. *Education and Training of the Mentally Retarded*, 1975, *10*, 174-186.

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The Criterion of Ultimate Functioning and Public School Services for Severely Handicapped Students[1]

LOU BROWN, JOHN NIETUPSKI and SUSAN HAMRE-NIETUPSKI
University of Wisconsin and Madison Public Schools[2]

PART I
POSITIONS AND ASSUMPTIONS

Not too long ago there were few, if any, educational services for mildly retarded or mildly handicapped students in American public school systems. Self-contained schools and self-contained classes within regular schools were generated and proliferated soon thereafter. For years self-contained schools and self-contained classes within regular schools were considered the most efficacious models in which to provide educational services to mildly handicapped students.

In 1968 Dunn published his now famous article, "Special Education for the Mildly Retarded — Is Much of it Justifiable?" There Dunn crystalized the judgments, suspicions, and feelings of many persons in and out of special education — namely, that the placement of mildly handicapped students into self-contained schools and self-contained classes was unduly restricting their general development and not preparing them to function adaptively in complex, integrated, community based post-school environments.

In the past the predominant educational service delivery models generated for the majority of severely handicapped students in this country were: (a) placement on large self-contained residential facilities (institutions); (b) placement in self-contained schools; (c) maintenance at home; and (d) the use of private facilities such as churches or facilities supported by private associations concerned with providing services for retarded citizens.

Within the past 5 years, due to encouraging judicial, executive, and legislative reactions to the advocacy activities of many enlightened parents and other persons and groups, formerly rejected severely handicapped students are now being served in community based public schools. Unfortunately, it seems that the overwhelming majority of severely handicapped students now in public schools are being served in self-contained facilities. Self-contained facilities will ultimately be rejected for the same reasons that self-contained programs within regular schools for mildly handicapped students have been and are being rejected.

There is no doubt that the spirit of the times requires that severely handicapped students be allowed to grow within the least restrictive developmental environments. Placement in large multipurpose institutions, sustained maintenance at home, and/or sustained placement in self-contained classes within segregated schools is generally restrictive. The community must create other more educationally tenable developmental environments.

Severely handicapped students should be placed in self-contained classes in regular schools. Severely handicapped students should eat, recreate, assemble, travel, ambulate or be ambulated, play, read, study, and learn with students of all developmental functioning levels. Why? Because severely handicapped students will no longer be locked up in isolated dehumanizing institutions; they will no longer be hidden in homes; they will no longer be rejected from public schools; they will no longer be sheltered from society. They have the right to be visible, functioning citizens integrated into the everyday life of complex public communities.

The Logic of Homogeneity

One of the most pervasive, and in our view questionable, philosophic assumptions in our society is that homogeneity is a *generally* positive objective that should be approximated if not realized. This general quest to cluster according to similarities, to stratify on the basis of differences, and to realize uniform compositions is referred to here as the logic of homogeneity.

Discernible manifestations of the logic of homogeneity are prevalent in many aspects of our society. Predetermined efforts have been made to group according to skin color, family heritage, verbal accent, sex, religious affiliation, military rank, professional or paraprofessional status, wealth, and academic degree, to name only a few. These manifestations are often based on such assumptions as (a) people do better and are happier if they are with their own kind, (b) people who are different than us do not like us, (c) our cultures are too different, (d) if God wanted us to be together, She would have arranged it, and (e) overcoming the communication problem is not worth the effort.

In education generally there have been many manifestations of the logic of homogeneity. For example, students have been "tracked" within and between schools and classes, males and females have been stratified in "health" and physical education classes, and parochial schools and athletic leagues are prevalent.

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[2] Brown, L., Nietupski, J., and Hamre-Nietupski, S. The criterion of ultimate functioning and public school services for severely handicapped students. In L. Brown, N. Certo, and T. Crowner (Eds.), *Papers and programs related to public school services for secondary-age severely handicapped students.* Vol. VI, Part 1. Madison, WI: Madison Metropolitan School District, 1976. (Republished: *Hey, don't forget about me! New directions for serving the severely handicapped.* Reston, VA: Council for Exceptional Children, 1976, pp. 2-15).

In special education, the logic of homogeneity abounds to the point of absurdity. Special educators have established self-contained classes, self-contained schools, groupings for the orthopedically handicapped, the blind, the mildly retarded, the emotionally disturbed, and the trainable mentally retarded, and on and on ad infinitum. By affording credence to the presumed positive properties of the logic of homogeneity within educational systems, educators have systematically, although inadvertently, impeded many handicapped and nonhandicapped students from acquiring the skills, values, and attitudes necessary to function in heterogeneous multifaceted and interpersonally complex adult environments.

Many persons concerned with providing developmental services to mildly handicapped students have rejected, or are now in the process of rejecting, the basic tenets of the logic of homogeneity. Those persons concerned with providing the best possible educational services to *severely* handicapped students should do the same. However, it should be noted and emphasized that certain kinds of homogeneous groupings in selected settings for selected purposes may be educationally, medically, and socially tenable. That is, to reject the logic of homogeneity completely is probably as irrational as to absorb it completely. The point is that the logic of homogeneity as it relates to the provision of educational services for severely handicapped students is *generally negative*. Homogeneity must be scrutinized carefully and rejected in favor of heterogeneity whenever possible.

The Logic of Heterogeneity

The logic of heterogeneity leads to the position that persons of differences or dissimilarities in almost all aspects of existence should interact. Most postschool community based domestic, vocational, and recreational environments are fundamentally heterogeneous in nature. If severely handicapped students are to be expected to function effectively in heterogeneous community environments, as many preceding developmental experiences as possible should represent that heterogeneity. Every time educators make a decision affecting the longitudinal development of a severely handicapped student, they must seek manifestations of the logic of heterogeneity.

If educators had ascribed to the logic of heterogeneity in the past, they would not now be confronted with ways in which to dismantle "state schools", self-contained public schools, and other forms of segregated instructional settings. At this time it appears that one of the most realistic manifestations of the logic of heterogeneity would be to encourage comprehensive and longitudinal involvement with nonhandicapped persons in a diversity of constantly changing community environments.

Degrees of Instructional Inference

Most teachers assume varying degrees of instructional inference when relating to students, regardless of their functioning levels. Generally, the less handicapped the student, the higher the degree of inference regarding the performance of that student. For example, teachers of nonhandicapped students often teach the rational counting of wooden pegs. After a student has performed at criterion on this task, it is usually inferred that the student can also rationally count eating utensils, money, and completed work units. This, of course, represents a relatively high degree of instructional inference. Implicit in relatively high degrees of instruction inference is the assumption that from specific training on circumscribed or core tasks, students will abstract the critical factors, strategies, rules and concepts from the training environment, and apply them in new and varied environments.

At this stage in the evolution of instructional technology, critical factor strategies can be afforded little educational credence. That is, to our knowledge, it has not been empirically demonstrated that the teaching of a few critical skills has resulted in substantial increases in the general developmental functioning levels of many severely handicapped students. Thus, teachers of severely handicapped students can rarely, if ever, infer that because a student performs a particular skill in an artificial setting he or she can also perform that skill in other more natural settings.

Unfortunately, it may be necessary to teach severely handicapped students all the skills, concepts, actions, and responses required for adaptive performance in all the postschool environments to which they will be exposed. Such an instructional possibility is referred to here as a *zero degree inference strategy*. That is, no inferences are made that training to a criterion on any task in one situation will result in criterion performance in similar but different situations requiring similar or slightly different actions. Each time a situation changes for a severely handicapped student, it will be necessary to empirically verify that he or she can perform the skills required by that new situation.

Occasionally it has been demonstrated that severely handicapped students can acquire relatively complex skills. However, rarely have severely handicapped students, taught to perform complex skills in artificial instructional settings, been able to perform relevant versions of those skills in natural community settings. Thus, until such time that critical factor strategies are demonstrated empirically effective in developing the skills necessary for severely handicapped students to perform a variety of skills in a variety of community settings, with a variety of persons, language cues, and materials, it appears that approximations of zero degree inference strategies offer higher probabilities that students will be able to perform acceptably in less restrictive environments as adults.

Educational Service Characteristics

As large numbers of severely handicapped students enter into less and less restricting community environments, the current performance differences between them and their nonhandicapped age peers will be quite

dramatic. Initially such dramatic differences will engender fear, frustration, rejection, and hopelessness in many sincere and well meaning individuals, both in and out of the human services movement. In time, the initial negative emotional reactions will abate and the collective consciousness and energies of the community will be redirected toward providing the best possible developmental services.

In some school districts attempts will be made to maintain as much physical distance as possible between severely handicapped and nonhandicapped citizens: Old school buildings will be opened or renovated and *only* severely handicapped students will be assigned to them; new school buildings will be constructed under the guise that the students of concern are in need of "special A, B, or C". However, as educators realized when they attempted to provide specialized services to mildly handicapped students, segregating procedures impede achievable approximations of human potential.

At least one major question should be addressed: Over long periods of educational time, what are some of the fundamental characteristics of the most creditable educational services based upon the best available information? The position taken here is that in addition to the constant quest to realize the criterion of ultimate functioning and to manifest the logic of heterogeneity, there are at least three additional factors that must be considered basic characteristics of educational services for severely handicapped students.

First, specialized educational services should be provided as soon after birth as possible. The reasons for early educational intervention as it relates to the involvement, acceptance, and training of parents, and longitudinal human development are obvious. The point of emphasis here is that if any child is identified as, or is at risk of becoming, severely handicapped on Monday and a public school contract is not made until Wednesday, it is one day too late.

Second, educational services for severely handicapped students must be comprehensive and coordinated toward educational development. Severely handicapped students manifest a variety of developmental delays and require at least the expertise of physical, occupational, language, and medical therapists, persons capable of providing visual and auditory assessment and habilitation, as well as the general resources of the educational community. On the other hand, it is also obvious that, although the multidisciplinary team is a "sound good" phrase, such a concept rarely produces coordinated and empirically verified educational outcomes. Indeed, a challenge educators must confront and meet is the design of systems to both articulate and harvest the contributions of varied persons and disciplines and filter the persons and or disciplines that detract from the development of empirically tenable educational services.

Third, the services that are provided for severely handicapped students must be longitudinal as opposed to episodic. An episodic intervention refers to the brief involvement of a professional in the developmental lifestyle of an individual. There are thousands of instances when episodic interventions are empirically tenable, particularly when nonhandicapped persons are the recipients of such interventions. For example, if an individual contracts an infection, he or she can spend a few minutes with a physician, receive an injection and the problem is solved. If a muscle around an eye contracts, one can visit an optometrist and after a brief examination and a change of glasses, the problem is solved. The availability and functional validity of episodic interventions are perhaps some of the most positive aspects of this society.

The general functional invalidity of episodic interventions is a critical source of frustration for parents and professionals who relate to severely handicapped students. Parents can take their severely handicapped child for a vision examination, but in fact the professional may not be able to provide a valid diagnosis and an empirically verifiable prescription. As a result, many severely handicapped students function with uncorrected visual problems. A longitudinal approach to the problem, although requiring more time and money, obviously is warranted. The sustained coordination and ingenuity of many persons will be required before the most effective visual prescription can be empirically determined.

A similar situation exists when parents take their severely handicapped children to the standard multidisciplinary team of experts. About 2,000 professionals representing 1,400 disciplines at an enormous cost spend from 30 to 37 minutes each with a severely handicapped student. After this series of episodic interventions, programmatic recommendations are then made to parents and teachers. Generally, few followup efforts are attempted to ascertain the empirical value of the recommendations and/or to suggest changes in programming based on the progress of the child. The educational outcomes are unfortunately predictable.

The Criterion of Ultimate Functioning

Large multifailure residential facilities and other segregated facilities for adult severely handicapped citizens will be replaced by complex, integrated, developmentally facilitative community models. Thousands of severely handicapped citizens will attend church, shop, wait in the offices of physicians, ride public buses, wash dishes, attend movies, use restrooms, cross streets, and cheer at football games with less handicapped and nonhandicapped citizens. If severely handicapped adult citizens are to function effectively in heterogeneous community environments, both handicapped and nonhandicapped citizens will require longitudinal and comprehensive exposure to one another. Such exposure will enhance the probability that the skills, attitudes, and values so necessary for tolerance, understanding, and absorption will be realized.

The criterion of ultimate functioning refers to the ever changing, expanding, localized, and personalized

cluster of factors that each person must possess in order to function as productively and independently as possible in socially, vocationally, and domestically integrated adult community environments. Since severely handicapped citizens will ultimately function in settings which contain less handicapped and nonhandicapped citizens, the majority of the developmental environments to which most severely handicapped citizens are now exposed will require substantial changes. Longitudinal segregation, whether manifested in residential institutions or self-contained schools, homes or classes will not culminate in the realization of the criterion of ultimate functioning.

The position taken here is that the requirements of the criterion of ultimate functioning should be the standards by which educational activities are judged as they relate to severely handicapped students. Any activity, however episodic or apparently inconsequential, must be related to the criterion of ultimate functioning, or that activity should be terminated. Thus prior to the initiation of any interaction with the severely handicapped students we must at least ask the following questions:

1. Why should we engage in this activity?
2. Is this activity necessary to prepare students to ultimately function in complex heterogeneous community settings?
3. Could students function as adults if they did not acquire the skill?
4. Is there a different activity that will allow students to approximate realization of the criterion of ultimate functioning more quickly and more efficiently?
5. Will this activity impede, restrict, or reduce the probability that students will ultimately function in community settings?
6. Are the skills, materials, tasks, and criteria of concern similar to those encountered in adult life?

In the following pages attempts will be made to communicate the idea that many educational assumptions and practices currently in operation or in proposal, although appearing educationally sound and expedient, actually interfere with the realization of the criterion of ultimate functioning.

PART II
INSTRUCTIONAL PRACTICES

For the past several years we have made attempts to develop instructional programs for severely handicapped students in community based public school zero exclusion educational settings. In addition, we have had the opportunity to visit many similar educational programs around the nation in an attempt to both provide and receive technical assistance. As a result of our experiences we have modified many of our attitudes, techniques, assumptions, and instructional practices as they relate to educational strategies that are typically used or advocated for use with severely handicapped students.

As we tried to relate many of our instructional practices to the standards of the criterion of ultimate functioning, many inadequacies and failures surfaced. In this section we will describe some of the instructional practices we formerly recommended for general use, some of the difficulties we have encountered with those practices, and some of the adaptations we are currently entertaining.

The Relative Value of One-to-One Instructional Arrangements

It has often been proposed that severely handicapped students need one to one instruction. Undoubtedly, one to one instruction has educational validity. In fact, all children, whether or not they are handicapped, are probably in need of, and should receive, the undivided attention of an adult during some portion of their school day. The salient issue here is related to the proportion of the school day that should be consumed with one to one instructional interactions as opposed to larger ratio interactions.

It is generally assumed that the more one to one instruction a student receives, the more educational advancement can be expected in the long run. However, after a considerable number of failure experiences over a long period of time, we have rejected that assumption. It now seems reasonable to provide fewer one to one instructional arrangements and more arrangements that involve (a) group instruction, (b) clustered individualized instruction in which one teacher engages in individualized interactions with a cluster of three, four, or five students, and (c) instruction that generates adaptive interstudent interactions in the absence of the direct involvement of persons in authority.

Obviously, one to one instruction is enormously expensive in terms of personnel, time, and money. If the only issue was expense and not educational development, educators would be morally bound to provide such instruction. However, in addition to expense there are other more significant educational reasons for minimization of one to one instructional arrangements.

First, one to one instructional arrangements typically include a teacher providing a cue to which a student is required to respond. When the criterion of ultimate functioning is considered, extensive longitudinal use of teacher cue/student response paradigms prevents or interferes with the acquisition of self-initiation skills. Educators have inadvertently developed students who will perform well if a specific teacher provides certain cues but who fail to perform in other settings, with other cues or other persons. Thus, one potentially negative outgrowth of the extensive use of one to one instruction in which teachers provide cues to act is that students become too stimulus bound to the cues provided by their teachers. Instruction utilizing additional arrangements may function to prevent such problems and thus assist students to prepare to function in a variety of adult environments.

Second, one to one instruction where teachers provide cues to students and where students become bound to those cues impedes the development of adaptive interstudent interactions. Time and time again situations are reported in which students play a game effectively with a particular teacher, parent, or university student in training, but cannot or will not play with an age or developmental peer. This, of course, is a developmentally unsound outcome in that the student is supposedly preparing to ultimately function in an environment where a substantial amount of his life will be spent relating to, enjoying, and learning from and with a variety of age and developmental peers.

Third, it is often hypothesized that a particular student is "not ready for group instruction" due to a variety of medical, behavioral, and educational deficiencies. Thus, teachers often enter into one to one instructional arrangements assuming that the skills the student develops in one to one settings are necessary for, and will culminate in, adaptive performance in group settings. In a large number of situations this has proved to be a false assumption. Indeed, just as teachers learn to function in one to one instructional settings and malfunction in group instructional settings, so do students. The strategies that we are attempting to develop currently require that all students, *no matter what their level of functioning*, receive some instruction in group instructional arrangements.

There seem to be at least two additional difficulties that might arise from the overuse or misuse of one to one instructional arrangements. First, teachers who develop one to one instructional skills often do so at the expense of the development of group instructional skills. In the past, when attempting to train teachers to work with severely handicapped students, we would begin the training sequence by placing university students in one to one situations on the wards of a residential institution. Often this was an ineffective training experience even though many trainees became quite effective teaching one child to perform one skill. Many of the teaching skills necessary to do so were incompatible with the clustered individualized teaching of groups of 3, 4 or 5 students in public school classrooms who manifested varying degrees of behavior management problems and who required different instructional materials, interaction styles, and response consequences.

Second, in many educational settings in which one to one instruction is emphasized, the situation ultimately arises in which (a) there are more students than teachers and (b) the students do not have appropriate self-regulated play, work, or social skills. Thus, an unfortunately typical scene is to witness a teacher, an aide, a parent, and a practice teacher working in one to one instructional arrangements with four students on one side of the room, while the remaining students are restrained to chairs, roll on floors, self-stimulate, or self-mutilate in other parts of the room or "watch TV".

Obviously there are a substantial number of technical problems related to larger ratio instructional arrangements. However, it appears more developmentally tenable to this point to attempt to generate instructional procedures that solve the problems that accrue from larger ratio arrangements rather than to revert to an inordinate use of one to one instruction.

Group instruction, as the term is used here, refers to a teacher attempting to teach more than one student at a given time in the same manner using the same words, materials, and so on. In our experience, group instructional arrangements are often inefficient in that (a) teachers tend to teach to the more responsive students in the group, (b) it is extremely difficult to evaluate individual progress in that it is quite cumbersome to verify that each student is performing the skills of concern, and (c) it is the rare group of severely handicapped students who progress through educational curricula at the same pace. On the other hand, the limited and carefully selected use of group instructional arrangements has enormous longitudinal practical value. Sustained attempts must be made to insure that students acquire the skills necessary to secure information from group arrangements.

In summary, the criterion of ultimate functioning requires that individuals perform in complex community settings which demand multiple person cooperative and interactive skills. Extensive use of one to one instructional arrangements over long periods of time results in few of these skills. Thus, where we once recommended the extensive use of one to one instruction, we are now recommending that students also receive a substantial amount of instruction in group and clustered individualized arrangements and in arrangements that allow them to teach and learn from each other. The amounts of time allocated per day to each arrangement, of course, should be determined empirically.

The Use of Repeated Practice Strategies

Repeated practice strategies are teaching strategies that generate large numbers of direct instructional trials in relatively short periods of time. As severely handicapped students typically require relatively large numbers of direct instructional trials in relatively short periods of time in order to attain criterion performance on many tasks, repeated practice strategies are of enormous practical value and their proliferate use is understandable.

There are probably thousands of tasks that have been taught through repeated practice strategies to handicapped and nonhandicapped students. Solving simple mathematical equations, rote counting differentiating colors, recognizing polar opposites, and verbally labeling flash cards are but a few examples. Repeated practice strategies might be most useful when it is important for a particular skill to be taught, but there is an insufficient amount of naturally occurring instructional trials during the school day. For example, assume that a teacher intends to teach a student to put on and remove cold weather gloves. Under natural

instructional conditions, the teacher may be able to provide the child with three or four teaching trials per day. However, under artificial training conditions the teacher might arrange for 20 or 30 repeated practice teaching trials per day until the child reaches criterion in the task in the repeated practice arrangement. Subsequently, the student can be taught to perform the skill under natural life conditions. In this situation, and in many similar situations, there are relatively few differences between the actions taught under repeated practice arrangements, and the actions required in the natural environment.

Repeated practice strategies have been and will continue to be used to teach many valuable skills to severely handicapped students. However, although there is little that is inherently questionable about repeated practice strategies, the proliferate use and subsequent teacher reliance upon such strategies tends to foster the use of artificial instructional materials, tasks, and settings and the formulation of questionable educational objectives and performance criteria.

In an attempt to minimize or avoid the potentially deleterious effects associated with the sustained overuse of repeated practice strategies, at least three alternatives seem reasonable. First, teachers can include a substantial number of functional, as opposed to artificial, tasks in the curriculum. Second, teachers initially can utilize artificial tasks and criteria and then teach students to perform the developed skills in natural settings. For example, touching polar opposites as they are presented via a teaching machine can be considered tenable only if criterion performance on that artificial task is followed by empirical demonstrations of the functional use of polar opposites in natural settings. Third, teachers can increase the number of single person and multiple person peer game skills. Games are crucial educational vehicles in that they are generally more intrinsically interesting than two dimensional two choice discrimination tasks requiring responses. They can be used to develop and maintain valuable interstudent language, reading, math, and social skills. Finally, they can enhance the probability of performance across places, persons, and materials in that students can readily engage in games in settings away from school. Again, the point here is that criterion performance of a skill as a result of a repeated practice strategy in an artificial setting does not often result in the acceptable performance of that skill in natural environments.

Consistent Inconsistency or Systematic Variation

Teachers have often been confronted with a student who does well interacting with one adult, but does not interact with others. For example, Johnny may perform for Ms. Jones, but not for anyone else. It might be argued that since it is crucial for Johnny to perform, Ms. Jones should be encouraged to work with him until some time in the future. However, when this strategy is referenced against the standards of the criterion of ultimate functioning, the potential deleterious effects become readily apparent. In heterogeneous adult environments, citizens are required to respond to, and in the presence of, a wide variety of persons. By arranging such circumscribed actions and reactions, a teacher is systematically impeding the development of the skills necessary for independent survival in heterogeneous adult communities. In an attempt to minimize the development of such circumscribed interactions, many strategies are no doubt possible. However, there are several strategies that seem to offer reasonable promise.

Each time a student is taught a functional skill or game, it might be required that the skill be performed (a) in reaction to, or in the presence of, at least three different persons, (b) in at least three different natural settings, (c) in response to at least three different sets of instructional materials, and (d) to at least three different appropriate language cues. To illustrate, assume that a student is taught to play a game with a ball in a classroom. The teacher then must either teach the student to, or empirically verify that the student can, play ball (a) at the playground, (b) at home with a peer, a parent, and a sibling, (c) in response to such verbal language cues as "throw it", "hit me", "zip it over here", and (d) with basketballs, baseballs, and colored plastic balls.

The verbal language cue component of any strategy is particularly crucial in that teachers often inform parents that a student reached criterion on a specific task. Parents often attempt to induce the performance of that skill at home, but fail. Further analysis often reveals that the teacher use one verbal language cue (e.g. "Go find your") and the parents used another (e.g. "Get me"). Attempts to *standardize* the verbal language cues so that both the teacher and the parents use exactly the same words are longitudinally questionable in that in heterogeneous adult community environments different people use many verbal language cues that require the same response. The standardization of *variation* on the other hand, may enhance performance across verbal language cues. Thus, when a student is taught to perform specific skills in response to a particular verbal language cue, the task should not be considered mastered until the student performs the task in response to the other verbal language cues in his natural environment that require the same response.

It seems that teachers have several available options to insure that students perform accurately and consistently to varying cues. For example, assume that four verbal language cues are used in the natural environment in relation to a particular skill. A teacher could use a consecutive strategy and teach appropriate responding to the first, second, third and fourth verbal language cues respectively until the students respond appropriately to all four cues when they are presented randomly. A teacher could use a concurrent strategy in which students receive training on all four cues at the same time until they respond appropriately to all four cues when they are presented randomly. A teacher could use a combined or a different strategy. Regard-

less of the particular strategy, students must be prepared to perform in complex natural environments that are constantly varying and evolving. Thus, rather than support the orientation that the instructional environments of severely handicapped students should be standardized, we are suggesting that their instructional environments should be "consistently inconsistent" or systematically varied.

Toward Naturalized Curricula and Schools with Small Permeable Walls

The instructional materials, tasks, consequences, objectives, and criteria to which severely handicapped students are exposed in educational settings should resemble those that students will encounter and need in community domestic, social, leisure, and vocational settings. However cumbersome, time consuming, inconvenient or expensive it may be to do so, the pegs, felt squares, pictures of money, tokens, pictures, edible consequences and many, if not all, of the commercially available kits and irrelevant paper and pencil tasks should be faded out. Real money, real streets and cars, real people, real stores, real sounds and smells, real tools and objects, real group homes, real world settings, real appliances and utensils, real motor skills, and real ridicule, rejection, and disappointment must replace them. An empirically verifiable naturalized life space curriculum designed to teach the skills required in heterogeneous community environments is the order of the day.

There are at least three major reasons why curricula for severely handicapped students should be naturalized. First, artificial materials and settings seldom provide students with the information needed to solve practical problems in natural settings. Because a severely handicapped student can solve the problem "2 + __ = 4" on a commercial worksheet in a classroom, it does not necessarily follow that he will be able to respond correctly to the problem in which four people will be eating dinner and there are only two chairs at the table. Crucial information contained in the latter functional task is not present in the former artificial paper and pencil task.

Second, the actions and criteria required by many of the most popular artificial tasks and materials are often not the crucial actions required in more functional environments. Artificial tasks and materials often require touching, marking, and verbally labeling actions. Functional tasks, materials, and criteria, on the other hand, require picking up, getting, showing, assembling, distributing, responding motorically to printed stimuli at community accepted rates, latencies, and durations. Certainly there are situations in which it is feasible to start with rudimentary movements, limited to isolated instructional sequences, and artificial materials, but education should never stop there. It should not stop until the teacher has demonstrated empirically that these students can function as independently as possible in the most open, positive, and actualizing environments imaginable.

Third, since we are preparing students to function in heterogeneous adult environments, most of the necessary training experiences should be conducted in extra-school building environments. The school as manifested by a building may be necessary but it is *not* sufficient as the major or only facility needed to prepare severely handicapped students to reach the criterion of ultimate functioning. These students need schools with small permeable walls. Instead of bringing sheltered workshop tasks into a school workshop, instructors should disband the school workshop and teach the students the required skills at real workshops. Instead of using a "home economics room" in a public school, teachers should use real natural homes, foster homes, and group homes as the locations for the development of crucial self-help, grooming, social and domestic maintenance skills. Similarly, other vocational, shopping service procurements, and leisure skills should be taught during and after traditional school hours at real bowling alleys, theatres, stores, restaurants, swimming pools, office buildings, laundries, and motels.

Perhaps it is appropriate here to relate to the relative merits of simulated training experiences. There is no doubt that criterion performance on simulated tasks can be a valuable adjunct to the development of many crucial developmental skills. In fact, under certain circumstances it may be construed as almost mandatory that simulated experiences be utilized (bus riding and street crossing seem reasonable examples). However, severely handicapped students do not allow the degree of inference necessary to assume that criterion performance on a simulated task guarantees criterion performance in the environment in which the skill will ultimately be required. There can be no substitute for empirical verification of the performance of a skill in the natural environments in which the skill is required.

If we now had available to use the most tolerant of all possible communities, an unlimited budget, the collective use of the best professionals in existence, all necessary enabling legislation, the most advanced service delivery models, ideal parents, and excellent medical care, we still would not be able to provide severely handicapped students all needed services. The skills of our students are limited by the information we have within our grasp. The information we have within our grasp is tragically meager. If substantial improvements in services to severely handicapped students are to accrue, new information must be generated. As educators we must realize that we are infants in this area, that most if not all of our pet theories must be revised, and that we need to expose our ideas and practices to the scrutiny of all. We must now confront our weaknesses, failures, and insecurities and set about the long hard task of demonstrating, rather than inferring, the best possible services for a most deserving group of citizens.

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Vocational Training and Production Supervision: A Review of Habilitation Techniques for the Severely and Profoundly Retarded[1]

G. THOMAS BELLAMY, DEAN P. INMAN and ROBERT H. SCHWARZ
University of Oregon

Legal decisions and parental pressure have led to an emerging national commitment to appropriate education and training for all handicapped individuals. Carried to its logical conclusion this philosophy should result in a significant increase in the services available to severely handicapped adults. Decisions regarding the right to treatment within institutions (Wyatt vs. Aderholt, 1971) and the present emphasis on deinstitutionalization suggest that communities must be prepared to offer daily vocational, educational and recreational programs to adults in need of specialized services. A strong emphasis on vocational opportunities in these programs will reflect the significant role of work in our society and will be consistent with professional interest in both normalization and individual development.

Among those most immediately affected by the press toward deinstitutionalization are the severely retarded. For them, a changing array of potential community services offers some promise that the gap between research results and traditional expectations may be narrowed. This situation appears to have generated considerable interest in a more thorough examination of research and practice relating to the development of vocational opportunities for severely and profoundly retarded adults. Thus, while the material reviewed in this chapter may be relevant to other groups labeled severely handicapped, it is unlikely that it will be as complete for them.

The assumptions and values with which a body of knowledge is approached often have much to do with both the questions which are posed and the conclusions which are drawn (Kuhn, 1962). In this discussion of the vocational habilitation of the severely and profoundly retarded, retardation will be viewed as a problem of behavioral deficits which can be remediated through adequate environmental programming, rather than as an irreversible condition arising from an impaired intellectual functioning (Bijou, 1963; Lindsley, 1964; Myerson, Michael, Mower, Osgood & Staats, 1963).

For some time prevalent views of severe and profound retardation have included a notion of limited potential, a belief that retardation causes or is necessarily associated with an inability to perform a variety of normal activities like communicating with others, taking care of personal needs, living in the community, and participating in vocational opportunities. Following the numerous demonstrations of the acquisition of skills, many of these assumed limitations are being discarded by both professional and public groups. Nevertheless, the belief in limited vocational potential has proven to be resilient. Adult programs continue to be established "for handicapped clients whose physical or mental impairment is so severe as to make their productive capacity inconsequential" (Federal Register, 1974, p. 17509).

As has been the case with other skill areas, a growing research literature suggests that the concept of limited vocational potential so often assigned to retarded persons should be replaced with a recognition of the possibility of vocational competence after structured training. There are numerous reports that adults, who clearly fall within the AAMD definitions of severe and profound retardation (Grossman, 1973), are able to learn a variety of vocational skills. For example, Loos and Tizard (1955) were able to train six "imbeciles" to fold and glue together cardboard cake boxes. Then Clarke and Heremelin (1955) taught these same adults to cut insulated wires to exact length, to solder four colored wires to color coded terminals of an eight-pin television plug, and to complete a nine-component bicycle pump assembly. After a lapse of more than a decade and with roughly the same population of retarded adults, other studies have reported similar results in teaching such skills as stripping and sorting plastic components (Williams, 1967), manufacture of wooden pencil holders and flower baskets (Crosson, 1966), assembly of a 12-piece bicycle brake (Gold, 1974), assembly of 24- and 26-piece printheads and assembly of a 52-piece cam switch actuator (Bellamy, Peterson, & Close, 1975), bagging garlic bulbs and labeling them for commercial sale (Friedenberg & Martin, 1975), and construction of a difficult cable harness (Hunter & Bellamy, 1976). Thus, over a 20-year period the work potential of this population has been repeatedly demonstrated.

Taken together, these demonstrations provide a realistic basis for questioning whether it is useful to associate various levels of retardation with assumed limitations of individual potential for vocational and/or other behavioral skills. In fact, the research does much to support the contrasting view of retardation which provides the framework for this review. Deficit vocational behaviors imply a need for improved environmental programming, not a limitation on a retarded person's work potential. The salient question now facing habilitation specialists is not whether severely

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and profoundly retarded adults can be taught the skills necessary to function independently in a vocational setting, but rather how best to teach these skills.

From this perspective, if a profoundly retarded adult is unable to function in a vocational setting, there are at least two possible explanations. First, the worker may not have the necessary skills to fulfill the job requirements. Such a deficit can result from a lack of necessary response topographies or a deficit in stimulus control that makes a worker unable to satisfy the contingencies in a particular work setting. For example, if a task requires a worker to use a screwdriver and the worker does not know how to hold and twist the tool, then s/he will be unable to complete the task satisfactorily. To overcome this type of problem, the worker must be taught the necessary response topographies. However, even if a worker has the topographies to use a screwdriver, if s/he fails to stop twisting the screwdriver when the screw becomes snug, the threads may become stripped or the head fouled. That is, the worker may not be sensitive to critical changes in the work environment. The solution is to provide training specifically designed to establish stimulus control; i.e., to bring appropriate response topographies under control of task-related stimuli.

A second explanation for vocational incompetence may involve an inordinately low work rate. That is, a worker could have the necessary response topographies and be under sufficient stimulus control so as to complete the task without errors, but if the rate of production is grossly inadequate, it is unrealistic to place the individual in a normal work environment. To overcome this type of problem, environmental programs must be designed to increase work rate to an acceptable level.

The present review discusses the problems of skill acquisition and work rate which contribute to vocational incompetence in severely and profoundly retarded adults. Specifically, the following section examines training techniques to alleviate skill deficits. The subsequent section deals with production supervision techniques which increase work rates.

TECHNIQUES FOR VOCATIONAL TRAINING

In view of the gap between popular expectations regarding what severely and profoundly retarded adults are capable of learning and what they actually can do when given proper instruction, it seems prudent to review the literature to determine how others have managed to overcome what must have been difficult teaching problems. Therefore, this review of training techniques describes how several vocational tasks were taught, although many aspects of the training procedures are not described in the published reports.

Loos and Tizard (1955) were faced with teaching six retarded males, whose IQ's ranged from 24 to 41, to fold cardboard cake boxes, a job requiring nine discrete movements to be made with "both hands, neatly and in a specific order" (p. 397). However, before formal training started, each subject was taught "to fold." (As will be discussed later, this constitutes what Becker (1971) refers to as teaching an operation.) According to Loos and Tizard, vocational training involved:

> No unusual techniques of training. . . . Rather the boys were first shown how to do the job and coached singly for about an hour. The group then worked under the supervision of the experimenter for a fortnight. When a patient failed to do the correct things in the correct order he was made to begin again and go through the whole sequence of movements correctly. (p. 397)

In a subsequent study Clarke and Heremelin (1955) were able to teach these same adults three industrial-like tasks: (a) a task requiring the use of a guillotine to cut an insulated wire to exact length (±¼"), (b) a soldering task in which four different colored wires were soldered to the correct terminal of an eight-pin television plug, and (c) a simple bicycle pump assembly task requiring nine different operations. Training on the first task involved explaining the task sequence, twice demonstrating (modeling) the proper sequence, then letting the worker cut five wires as practice, and finally "helping and correcting as necessary" (p. 338). It is not entirely clear how the second task was taught but apparently the trainees were assisted (primed) through the task until they could perform the soldering task unaided. In the third task workers were given "one demonstration of the assembly and then aid[ed] to follow the experimenter in each operation" (p. 339).

In a much more recent report Williams (1967) was able to train a single male, labeled profoundly retarded, to strip plastic components by initially "holding [the worker's] hands and forcing the action of pulling apart until he began to dislike this physical coercion so much that he did it himself" (p. 17). Then, evidently, various other sorting tasks were taught in the same fashion though specific information is not given about how these simple operations were taught. Crosson (1966) successfully trained seven severely retarded adult males to complete one task requiring the use of a drill press to make wooden pencil holders and a second task involving the use of a hammer to build flower boxes. The first step in the training program was to specify the component parts of each task, i.e., the functionally integrated units of behavior (operants) making up the response sequences (1969). Then, once the operants had been identified, the task was further analyzed to determine which stimulus cues were associated with each operant. Actual training was conducted by providing a demonstration of the component behaviors in their proper sequence and immediately prompting the trainee to imitate the modeled response. Immediate reinforcement, in the form of praise, candy and tokens, was delivered contingent upon the worker emitting the correct movement in the presence of the appropriate stimulus. In the final states of training extrinsic reinforcers were

faded out as were all other verbal cues or physical primes used in the early stages of training.

Bellamy, Peterson and Close (1975) trained two profoundly retarded adults to assemble a 19-piece cam switch actuator. The trainee was seated in front of a work tray, similar to that described by Gold (1972), where all the required parts were arranged in the order of use. The trainer then modeled each new step of the task after which the trainee was expected to perform that step without assistance. When correct responses were emitted, reinforcement (in the form of praise, edibles, or physical contact) was delivered immediately. Incorrect responses were followed by a correction procedure where "The trainer provided assistance with a verbal direction, model, or physical prime. . . . Then asked [the worker] to repeat the step" (p. 12).

Friedenberg and Martin (1975) trained two severely retarded men to place garlic bulbs into plastic bags and then staple on labels so the items could be sold in grocery stores. In the author's own words:

> The trainer began by physically modeling the steps necessary to obtain a completed product while stating verbally the operations he was performing according to the task analysis. He then told the student to try the task. An inability to complete a step correctly was dealt with first by a nonpunitive indication of error ("Try it another way"). If this had no effect, a verbal direction was given such as "hold the bag tightly." If the verbal instruction did not result in the subject correcting his error, a physical cue was given in the form of the step being modeled by the trainer with accompanying verbal instructions. The fourth level of correction (priming) consisted of manipulating the suoject's hands to help him complete the step correctly. No tangible reinforcement was given.

Hunter and Bellamy (1976) trained three severely retarded adults to construct an eleven-wire cable harness laced with a continuous elastic cord so it would retain its original shape when installed in an oscilloscope. First, a detailed task analysis was performed. Training consisted of one-to-one instruction beginning with a single demonstration of each step in the task. After that, the trainee was given the opportunity to complete each step on his/her own. When close approximations were emitted a variety of reinforcers were given including edibles, compliments and money. Incorrect or unacceptable responses were consequated by a correction procedure in which the trainer either modeled the correct response and/or physically primed the worker through the correct response. The trainee was then given another opportunity to emit an acceptable approximation.

Another series of vocational training studies deserves particular attention, although most of the published reports focus on adults labeled moderately retarded. In a series of studies of assembly skill acquisition, Gold and his co-workers (Gold, 1972, 1974; Gold & Barclay, 1973a) have developed efficient training procedures for assembly of two bicycle brakes. In these studies, training began by seating a worker at a table upon which lay a compartmentalized tray with parts enough to complete four entire brake assemblies. Then the trainer would give one demonstration showing correction and reinforcement procedures, i.e., the trainer brought forward each part, placed it within the appropriate compartment, and then assembled the entire unit. During the demonstration, "Errors were made, according to a standardized demonstration format, and verbal cues that would be given when the subject made an error were used. The most frequently used cue was, 'Try another way'" (1972, p. 7). Furthermore, "To correct manipulation problems it was sometimes necessary to give more verbal assistance" (p. 8). After a successful correction procedure the verbal response "Good" was given and the same cue was given at the end of each trial. More recent reports have noted the utility of these techniques with other tasks (Levy, 1975) and with more severely handicapped individuals (Gold, Note 1).

Of particular importance in Gold's work is the systematic comparison of the relative effects of variations in training procedure on measures of training time, retention and transfer. Moderately retarded subjects learned to assemble a bicycle brake faster when permanent color cues highlighted discriminations in assembly (Gold, 1972). However, when these cues were used as a training device and removed, so that ultimate performance was on the unmarked brake, acquisition was no more efficient than with direct training (Gold, 1974). In another comparative study in which procedures involved altering features of the work task itself, Gold and Barclay (1973b) taught a bolt sorting task involving a difficult length discrimination (a difference of $\frac{1}{8}$ inch between the two bolts). Teaching involved one of two methods, simple differential reinforcement, and training on progressively more difficult discriminations, beginning with bolts which differed $\frac{3}{4}$ inch in length, and continuing until the original task was learned. The latter procedure was more efficient.

Another comparative study further explored the issues raised in the Gold and Barclay (1973b) results. Irvin and Bellamy (1976) taught three groups of severely retarded adults a simple assembly task involving a difficult visual discrimination (distinguishing between 2 sides of a hex nut, one of which was raised .10 cm.). Each of three training conditions involved manipulation of stimulus features of the task, so that an easy discrimination could be taught first; then these stimulus changes were gradually removed until the criterion task was learned. Stimulus feature changes involved addition and reduction of large cue differences on the relevant dimension (the convex face of the nut was exaggerated), adding and fading redundant color cues; and a combination of these. With this task, the combination resulted in the most efficient learning, with the color cues ranking second.

In its entirety, this collection of vocational training

studies reflects considerable variation among professionals as to how vocational skills should be taught to severely and profoundly retarded adults, and some differences in how training procedures are conceptualized and described. In spite of these ambiguities, however, three things seem clear. First, there are various techniques or teaching methods that "work" in the sense that they serve to functionally improve vocational skills in severely and profoundly retarded adults. Second, low IQ scores do not preclude acquisition of difficult vocational tasks. Third, it appears that successes enjoyed to date are highly correlated with the fact that planned training programs were used in which tasks were broken down into their component parts and then taught to the workers directly.

Some Practical Techniques

During the past 20 years various teaching techniques based on behavioral theory have evolved which, when systematically applied, make good use of whatever potential a learner brings to the learning situation. In this section, a few of the most frequently used techniques for direct vocational training are discussed.

Problems in response topography. There are at least four basic methods that can be used to teach new response topographies or to improve the quality of responses already in an individual's repertoire. Though each is listed below as a separate technique, actual training usually involves the use of two or more simultaneously.

1. Shaping. This basic procedure is used to improve the quality of an overt response by differentially reinforcing successive approximations until the individual reaches a criterion level of behavior. That is, reinforcement is delivered contingent upon responses that more and more closely approximate the desired behavior. As training proceeds, i.e., as the trainee learns the task, the criterion for reinforcement goes up accordingly. In addition, when shaping a new motor skill the trainer has the choice of (a) waiting for the learner to emit approximate responses on his/her own (which, strictly speaking, constitutes a "pure" shaping paradigm) or (b) attempting to evoke superior approximations by assisting the learner in one way or another. In either case, it is understood that as the responses become more task specific they must be differentially reinforced to improve the topography (quality) over time.

The advantage of using a pure shaping paradigm is that, with the significant exception of the presence of a trainer, the learner is not exposed to superfluous discriminative stimuli (stimuli not normally present in the production setting) during training. This means there will be no subsequent need to transfer stimulus control, via fading procedures, before the worker can work independently in a production setting. But by the same token, a pure shaping paradigm may have a marked disadvantage in that it requires the trainee to emit reasonable approximations on his/her own, a process that may involve considerable waiting on the part of the trainer. In fact it is usually for the sake of saving time that most trainers argue for using "extra support" in the early stages of training. The contention is that by intervening they can get the trainee to emit fairly close approximations without delay. This not only speeds acquisition of new response topographies but it also avoids emotional reactions on the part of the trainee due to a history of "wrong" or unsatisfactory responding.

The remaining three techniques involve the provision of additional information prior to the trainee's response in order to maximize the probability that the desired response topography will be emitted. Each of these techniques relies on the application of shaping principles as well. Specifically, they all begin with a low criterion for reinforcement, and as training proceeds, the criterion level for reinforcement is gradually raised. Problems inherent in fading out trainer assistance are treated separately in the next section dealing with problems of stimulus control.

2. Physical priming. Whereas a pure shaping paradigm requires the trainer to wait for the learner to make increasingly better approximations on his/her own, physical priming involves physically holding and then moving the trainee through the desired motor response. This technique allows the trainee to experience very close approximations to the criterion response without having to suffer through what might be a lengthy period of incorrect responding after which there is no reinforcement. Further, it may avoid periods of long pausing that may well slow down training and subsequent production to the extent that "pausing" becomes a discriminative stimulus correlated with a superstitious chain consisting of a pause, a correct response, and then reinforcement. As mentioned above, the problem with this method of teaching new response topographies is that "correct responding" often comes under control of being held or touched by the trainer, since in the early stages of training, this stimulus condition often sets the occasion for reinforcement. Transferring stimulus control to stimulus conditions associated only with the task can be a difficult problem. In general, as with any kind of trainer-assisted instruction, physical priming should be used with the idea of eliminating the primes as quickly as possible. The longer they are used, the more difficult the withdrawal.

3. Modeling. On some occasions it may be possible to teach a skill by having the learner watch while the trainer demonstrates the correct motor response or a component of it. This procedure is usually adequate with individuals who can reliably imitate the trainer's demonstration. However, it is less likely that it will suffice, without prior imitation training, to teach vocational skills to many severely or profoundly retarded adults. One positive aspect of this technique is that a modeled response can lead to fairly good approximations after which it may be comparatively easy to further refine the response topography by shaping.

4. Verbal directions. As was the case with model-

ing, verbal instructions about the behaviors required by a task or the necessary discriminations may be sufficient to occasion correct responses from many individuals. This technique, however, is unlikely to be effective with the more severely retarded. Nevertheless, some data are available which suggest that the systematic use of verbal cues can facilitate acquisition by individuals whose language ability can be questioned (Gold & Barclay, 1973a).

A useful conceptual framework emerges when these last three techniques which involve trainer assistance are analyzed. Verbal directions, modeling and physical priming will be effective teaching techniques only to the extent that they provide useful information to the trainee, i.e., increase the probability of desired response topographies so that successive approximations can be reinforced. If, in fact, these sets of stimuli (teaching techniques) function as effective discriminative stimuli for the desired responses, the trainee may be said to have an operation. According to Becker (1971), "Operations are the essential *response* characteristics shared by a set of responses in a given universe of operations. *Instances* are to a *concept* as *individual responses* are to an *operation*" (p. 413). For example, a trainee would be expected to improve the topography of a desired response after the response was modeled only if some form of a generalized imitation skill was present. Similarly, verbal and physical cues will be effective only if the trainee has a generalized skill of following these cues with appropriate matching responses. A key issue in the efficacy of vocational training would thus appear to be the extent to which necessary operations are in a trainee's repertoire. Considerable attention has been paid to teaching generalized imitation skills to severely handicapped adults, but other operations have received less attention. An important exception is the work of DeBriere (Note 2) who taught severely handicapped adults a generalized skill of following picture cues in small parts assembly. Continued research is needed to evaluate the relative efficiency of direct training on individual tasks and prior training to establish some of these generalized skills, or operations, which could facilitate future learning.

Problems in stimulus control. Generally speaking, as a worker proceeds with a task, the stimulus characteristics associated with that task change accordingly, i.e., as something is put together it looks and feels different at each step in the chain. Ideally, these distinctive stimulus characteristics should function to inform the worker what to do next. If a worker has not learned which stimuli set the occasion for a particular response then some way must be found to teach these critical discriminations. To achieve this goal there are several ways to arrive at what behavior analysts call stimulus control. But, varied as these are, they all aim at getting the worker to attend to, i.e., respond as a function of, critical changes in the stimulus aspects of the task at hand.

In general, there are three practical techniques that can be used to improve stimulus control.

1. Differential reinforcement. This method for establishing stimulus control involves reinforcing, immediately if possible, all members of a specified response class in the presence of a defined stimulus condition. Noninstances as well as instances emitted outside the appropriate stimulus condition are never reinforced, i.e., they are extinguished.[2] A program using differential reinforcement will teach a worker what must be done and when, providing the program is carried out in a systematic fashion *and* providing the worker is able to determine what are and are not relevant stimulus dimensions.

In many discrimination problems differential reinforcement is either an ineffective teaching method or is inefficient in terms of both training time required and number of errors made (Gold & Barclay, 1973b; House & Zeaman, 1960; Sidman & Stoddard, 1967). For these problems two other general approaches are available, each of which relies on the use of differential reinforcement plus some additional changes in the antecedent stimulus conditions.

2. The first of these procedures involves manipulation of stimulus features of the task in order to accentuate the relevant dimension to which the trainee must attend and respond differentially. This may involve either adding and then gradually reducing large cue differences on the relevant dimension or adding and fading a redundant dimension which has a high degree of salience for the trainee. In either case the purpose of these stimulus feature manipulation approaches is to establish stimulus control over the trainee's behavior, then to gradually remove the added cue information until the original task occasions correct differential responding.

3. The other general antecedent-related method of establishing stimulus control involves gradually fading trainer assistance. As was noted above, the trainer can often increase the probability of correct responding by providing verbal instructions, models of the response, or physical primes. As this assistance is gradually faded, the trainee's behavior is usually expected to come under the stimulus control of the task. Fading may involve gradual reduction in the amount and specificity of information, as in replacing a direction like, "The raised side goes up," with a less informative direction such as, "Try again," or in replacing a complete model of the response with a simple demonstration of the initial hand position. Another fading approach involves gradually increasing the latency between presentation of the necessary trainer cue and the appearance of the task-provided discriminative stimulus. That is, the instruction, "The raised side goes up," might at first be given as the trainee picks up the part in question. Then, in later training trials the time interval between the instruction and the opportunity to perform the step could be lengthened

[2] Particularly good examples of this approach are described by Crosson (1966) and Screven, Straka and LaFond (1971).

while the trainee continues to respond correctly to the characteristics of the part itself.

Whichever method of establishing stimulus control is used, a special circumstance is encountered in many repetitive work tasks. When work involves repeated progression through a set sequence of behaviors, conceptualization of a single work cycle as an operant chain can be useful. Basically, a chain is a specified series of responses each of which is associated with a unique stimulus condition. In turn, each salient stimulus condition should function in two ways: First, each discriminative stimulus (except for the very last) should set the occasion for the subsequent response in the chain, and second, each should function as a conditioned (or secondary) reinforcer for the previous response(s). (For a detailed analysis the reader is referred to Kelleher, 1966.) Theoretically, this situation is what maintains a response chain until the very last response is emitted which, instead of leading to another discriminative stimulus, sets the occasion for reinforcement in the form of praise, tokens, money, etc.

The training issue is how to teach such a sequence of responses most efficiently, so that the dual function of the associated stimuli is established and subsequent responding is free of pauses and errors. Both forward (e.g., Gold, 1972; Hunter & Bellamy, 1976) and reverse (e.g., Screven, Straka & LaFond, 1971) chaining techniques have been used with success. The relative merits of the two procedures and their possible interaction with various task characteristics needs more investigation.

The present review has shown the utility of viewing vocational skill deficits as a problem of training rather than as evidence of limited potential. From this, one thing now seems clear. Although questions still remain as to what are the most effective methods for teaching vocational skills, the questions now facing us are amenable to empirical investigation. Only more time and effort are needed to solve these seemingly complex issues.

TECHNIQUES FOR SUPERVISING PRODUCTION

The practical utility of work skills acquired by severely handicapped adults will depend to a great extent on the rate and manner in which these skills are performed on the job. The task of production supervision, therefore, is to change rates of work and work-related behaviors in the production setting, so that normal productivity and acceptable work behaviors result.

Individual work rates are of central importance in sheltered vocational programs. By law they provide the basis for all remuneration. They are used by the Department of Labor and several other service agencies to classify both individuals and programs (*Federal Register*, 1974). Work rates also affect the overhead income of vocational programs and thus are an important aspect of the economic feasibility and subsidy needs of these programs. Further, some data are available indicating that work rates may affect supervisors' global performance ratings, on the basis of which employment decisions can be presumed to be made (Chaffin, 1969).

Work-related behaviors in production settings have occasioned considerable comment and study. Such behaviors as attending to tasks, disruption of coworkers, self-initiation, social interactions with coworkers, persistence and quality of work are clearly important in successful long-term employment.

That rates of work and work-related behaviors vary widely in sheltered vocational programs is evidenced by the voluminous attempts to account for this variability, as noted by Cobb (Note 3), Gold (1973), and Wolfensberger (1967). As indicated by Bellamy (1976) much of the literature attempts to relate productivity to three sets of variables and their interactions: characteristics of individual workers; characteristics of the work tasks performed; and characteristics of the physical and social setting. In keeping with the practical focus of the present chapter, research will be reviewed which describes the behavior of severely and profoundly retarded adults and presents specific supervision techniques which may be useful in changing production rates.

With few exceptions research on productivity has been limited to studies of workshop clients, who are primarily mildly or moderately handicapped. Thus, the lack of studies which focus specifically on the severely handicapped simply reflects their relative absence in workshop programs. The research which is available has dealt primarily with the effects of contingent consequences on rates of work or task attending behaviors. Three of the six adults participating in the Loos and Tizard (1955) boxfolding task would now be labeled severely retarded. In that study, performance during six and one-half hour work days was observed under various supervisory conditions. During the first five weeks of observation production rate was considerably higher in each of two weekly 30 minute "supervised" periods than at other times. During these periods workers were encouraged to work as fast as possible and discouraged from engaging in non-work behaviors. Loos and Tizard (1955) then provided graphical representation of productivity by filling in squares on a histogram as soon as a worker completed 150 boxes, thereby allowing comparison of performance with previous days. Introduction of the graphs was followed by an immediate increase in production of over 200%, but this gradually declined to baseline levels during the five weeks in which the contingency was in effect. Loos and Tizard (1955) and Clarke and Heremelin (1955) note that this group subsequently was able to perform work reliably and consistently and that individual work rates could be significantly changed by altering the method of supervision. Although some aspects of the total supervision system employed by Loos and Tizard (1955) are unclear, their work provided a convincing demonstration that sustained work performance was within the capabilities of the severely retarded adults in their

sample. Further, they demonstrated that production rate can be expected to vary considerably within work days and over more extended periods. Some rate variation can be reasonably attributed to the supervision procedures used, although much remains unexplained.

Crosson (1966) compared the work rates of 22 institutionalized severely and profoundly retarded adults under two different reinforcement conditions. Subjects worked under both an unspecified social reinforcement contingency intended to simulate a normal workshop setting and a specifically programmed fixed ratio contingency with token reinforcement. Work was performed during ten 24 minute periods under each contingency. Results indicated (a) statistically reliable differences between the token and social reinforcement conditions for each task and (b) an accelerating response rate across all tasks and both contingencies, which was interpreted by the author as a practice effect. It is unclear from the report whether performance differences should be attributed to type of reinforcement (social vs. tokens) or type of contingency (planned fixed ratio vs. unsystematic) and whether these differences can be expected to maintain over extended work periods. Nevertheless, Crosson's (1966) work demonstrated the effects of supervision procedures on initial work rates, and anticipated many of the issues still of concern a decade later.

Teasdale and Joynt (1967) reported the use of a token reinforcement procedure for supervising production efforts of five Down's Syndrome adolescents, some of whom were apparently severely retarded. Each performed a simple task, involving threading string through a packaging label, on which they had had considerable previous experience. Work was performed under two token reinforcement conditions. The first was a "cooperation" condition, or group contingency, in which the total performance of the group determined the reinforcement. The second was a "competition" condition. Both resulted in performance levels above undefined "normal" working conditions, although the design allows for several possible interpretations of this rate change.

Two studies by Zimmerman and his co-workers (Zimmerman, Stuckey, Garlick, & Miller, 1969; Zimmerman, Overpeck, Eisenberg, & Garlick, 1969) further evaluated the use of specifically planned contingencies of reinforcement in supervising production. Multihandicapped workshop clients performed either a terminal board assembly task or folded Goodwill bags. Contingencies which resulted in replicable improvements in work rates included (a) giving points, which could be exchanged for privileges at the end of each day when production met defined goals, (b) assignment to an isolated work area when daily work rates fell below defined goals, and (c) choice of work assignment contingent on reaching defined daily production goals.

Screven, Straka and LaFond (1971) reported the use of an automated device to change work behaviors of severely retarded adults. The work task involved assembling a two-piece coin tube. The device provided a stimulus cue (light) when assembly behaviors were appropriate and dispensed token reinforcers on predetermined schedules for task completion. Intervention strategies included changes in schedule of reinforcement for task completion behaviors and use of the light as a time out device which followed inappropriate behaviors. The authors do not present specific results, but report that, with this automatic supervision system, severely retarded adults were able to work at rates comparable to that of less handicapped clients with considerable stability of performance.

Two of the workers included in the Trybus and Lacks (1972) investigation apparently were functioning within the range of severe retardation. Work involved simple packaging and assembly tasks. For one worker an undefined contingency of token reinforcement for increases in production rates resulted in higher production rates than did either a baseline or a differential reinforcement of other behavior (DRO) condition. The worker reached a maximum of about 50 percent normal productivity during the token condition. The other worker exhibited several behaviors in the work setting which were construed as work-interfering behaviors (out of chair, turning around in chair, extended talk, refusing to use some parts). Each of these behaviors was reduced to near-zero frequency when supervisor attention was withheld following their emission.

Karen, Eisner and Endres (1974) used a token reinforcement system with adults labeled severely retarded. Each worker was involved in some aspect of preparing tin cans as nursery specimen cans. Work was performed during three-hour-and-fifteen-minute work days, but data were obtained during only 12 minutes of observation each day. Tokens were given on what was described as a variable interval schedule for appropriate work behaviors. Observation data indicated an increase in attending to task with the token reinforcement as compared to baseline conditions in a reversal design, and some decrease in errors during treatment. Overall productivity appeared little affected, however, and a two- or three-fold increase in production during followup suggests that all subjects may have been working somewhat inefficiently throughout the study. Nevertheless, the results do support the utility of supervisor controlled contingencies in changing rates of the work related behaviors of task attending and performance accuracy.

The use of social contingencies to increase work rates was the focus of a study reported by Bellamy, Peterson and Close (1975). A severely retarded man assembled a 52-piece cam-switch actuator under baseline conditions which were not defined and under treatment conditions in which supervisors were instructed to provide either social praise or prompts to return to work every two minutes. The effectiveness of the increased supervisor contact was demonstrated

in a reversal design, with production rates during treatment frequently above the normal time standard for the product.

In two additional case studies with adults labeled severely retarded, Bateman (1975) successfully increased the amount of time spent on specific work activities. In each case, when the opportunity to work on a more preferred task was made contingent on prior performance of a less preferred task, time spent on the less preferred task increased. In spite of the extremely short time frame of the study (two days in each experimental condition), the results demonstrated the possible use of the Premack principle in vocational supervision.

Two studies reported by Martin and Flexer (1975) provide further evidence that on-task behaviors of workers can be increased by varying supervision procedures. In both studies, workers were asked to work for gradually increasing periods of time, with reinforcement contingent on maintaining work behaviors throughout the period. On-task behaviors, productivity, and independence from supervisor prompts were increased.

The production studies discussed above strongly suggest that productivity levels of severely and profoundly retarded adults must be attributed at least in part to the type of supervision they receive. Unfortunately, many variables in the supervision process simply have not been explored with this population. Therefore, the information needed to define effective comprehensive supervision procedures is not available. However, research with less severely handicapped workers does offer some additional suggestions. For example, as Bellamy (1976) noted, the work rates of retarded individuals have been related to a variety of procedures including: (a) providing definitive instructions which encourage competition (Gordon, O'Connor and Tizard, 1955; Huddle, 1967) or set performance goals (Gordon, O'Connor and Tizard, 1954; Zimmerman, Overpeck, Eisenberg, & Garlick, 1969; Kliebhahn, 1967); (b) providing contingent positive reinforcement for work behaviors, using such consequences as money (Schroeder, 1972; Huddle, 1967, Brown, Van Deventer, Perlmutter, Jones & Sontag, 1972), music (Bellamy & Sontag, 1973; Cotter, 1971; Podvin, 1967), edibles (Brown, Johnson, Gadberry & Fenrick, 1971) and knowledge of results (Levy, 1974, Jens & Shores, 1969); (c) changing the contingency relationship between the work performance and reinforcing event (Schroeder, 1972; Trybus & Lacks, 1972); (d) providing contingent punishing consequences for low work rates (Zimmerman, Overpeck, Eisenberg & Garlick, 1969; Greene & Hoats, 1969; Screven & LaFond, 1973); (e) arranging for work with a more competent co-worker (Abel, 1938; Brown & Pearce, 1970; Kliebhahn, 1967). Thus there are a variety of potential changes in the work environment which may improve production rates. Until more applied research is completed with severely and profoundly retarded workers, these studies with the more mildly handicapped may provide some assistance in the design of useful supervision techniques.

Some Practical Implications

In evaluating the applicability of production research with both mildly and severely retarded populations, the practitioner must ask whether there are systematic differences between the reported experimental situations and the applied vocational settings in which the results may be utilized. Three questions seem particularly relevant: (a) Are the results generalizable to the larger population of severely and profoundly retarded adults who may be included in vocational programs? (b) Can the relationships between various supervision procedures and productivity be expected to maintain over the extended time periods which are inherent in practical vocational programs? and (c) Are the experimental treatments feasible in practical vocational programs?

Applicability to the severely and profoundly retarded population. With the exception of Crosson's (1966) work, most production studies involved subjects who were either enrolled in vocational programs or specifically selected for those programs. It is difficult to evaluate whether this selectivity has systematically eliminated some severely handicapped individuals whom future vocational programs will be expected to serve. The applicability of findings across individuals will thus be clearer if future production research efforts systematically include groups who may have been denied entrance to vocational programs.

A specific issue in applicability across individuals is the possibility that many stimulus events which the production superivsor can control might have less influence on the behavior of more severely handicapped workers. It is quite possible that the range of effective reinforcing events is reduced for some severely and profoundly retarded individuals. See, for example, the many efforts to identify effective reinforcing events for this group (Hollis, 1964; Tramontana, 1972; Watson, Orser & Sanders, 1967). It also seems likely that many discriminative stimuli, especially verbal communications, may be less useful with many severely handicapped individuals. Similarly, the utility of many contingency arrangements may be reduced by the initial inability of a worker to count, tell time, or otherwise monitor progress in relation to contingency requirements. These possibilities underscore the need to monitor individual performance under any supervision procedure, regardless of its previous effectiveness with other workers.

Applicability to long term vocational involvement. Most of the available research has evaluated the relationship between supervision procedures and work performance during relatively brief time periods. Whether performance during the first few weeks after a procedure is implemented is representative of performance during several months or years in a vocational program is a valid question. Changes in work rates over time were found in several studies. In

many of these, gradual improvement over time appears to reflect the effects of practice or exposure (Claridge & O'Connor, 1957; Crosson, 1966; Gold, 1973b; Gordon, 1962; Kahn & Burdett, 1967). In other studies, evidence is available that the effectiveness of contingency arrangements may decrease considerably over time (Loos & Tizard, 1955).

Applicability to actual workshop settings. The third possible impediment to research utilization reflects the practical realities of staff ratios, staff expertise, and equipment budgets in existing community programs. Research is needed to develop measurement systems and supervision procedures which can be implemented in typical workshop settings, and to develop and evaluate methods of staff training which will assist this implementation. The task of the practitioner charged with production supervision is to maximize the productivity and accuracy of each worker. Typically, this must be done in situations which are not maximally favorable research settings. For example, staff-worker ratios may be poor; supervision staff may not have access to necessary consultants; data processing and data display services may be totally absent; and type of work may vary considerably over time and across workers.

Some Specific Techniques

While the research on changing work rates clearly demonstrates the potential importance of supervision techniques, it does not provide a practical guide for combining these techniques into a useful overall supervision system. However, a few practical suggestions can be made which do appear consistent with the available research. Each will require some additional expenditure of staff time, but to the extent that they result in higher production levels for individual workers, they should result in more efficient operation of a total vocational program.

(1) Distinguish between vocational training and production supervision functions and include a worker in the production supervision setting only after the topography of the work behavior has been established and brought under stimulus control of task cues. The individual attention which is necessary to correct problems in topography or stimulus control during training can often function as a powerful social reinforcer for error responses in a production setting where one-to-one attention is not usually available.

(2) Implement daily measurement systems for worker productivity, based on number of work units completed, on-task behavior, or both. Work units completed during given time intervals are frequently recorded for payroll information, and daily totals or averages could be made available to production supervision staff with little extra effort. On-task behavior may be monitored on jobs not easily divided into equivalent units by time sampling procedures. For example, whether each of a group of workers is on- or off-task at the end of 5-minute intervals can be recorded in a few seconds by a supervisor with a simple timing device which signals when to observe and record.

(3) Identify events in the work environment which may function as reinforcing events for various workers, e.g., staff attention and assistance, access to various staff members for professional contact, assignment to preferred jobs, pay check advances, and so on.

(4) Plan systematic contingencies of reinforcement, using the events identified as consequences for task completion or task attending behaviors. Implementing these contingencies would be the primary role of the immediate floor supervisor.

(5) Evaluate the effectiveness of each contingency arrangement by noting its long term effects on the daily measures of productivity or attending behaviors of workers.

SUMMARY AND RECOMMENDATIONS

Research on habilitation of the severely and profoundly retarded provides an ample basis for viewing these individuals as potentially vocationally competent persons. Techniques are being developed which effectively remediate at least two kinds of problems which produce vocational incompetence: lack of the requisite skills, and performance of existing skills at inappropriate rates. For skill deficiencies, the literature suggests several approaches for both shaping desired response topographies and establishing necessary stimulus control. For problems of inappropriate rates, production supervision research with both severely and moderately handicapped individuals has illustrated several techniques which might be combined effectively by the practitioner who pragmatically evaluates their effect on individual productivity. In light of these results, policies and programs which presume that limited vocational potential necessarily accompanies severe handicaps should be critically reviewed. Nonetheless, many questions remain about specific procedural issues in both training and supervision. Procedures should be refined for teaching generalized skills or "operations" which are functional in a variety of vocational situations. More efficient procedures are needed for teaching the complex operant chains which available work often requires. Applied research on supervision procedures is needed to identify combinations of procedures which are feasible in normal work settings, which allow for differences among individuals in specific procedures used, and which effectively maintain high work rates over long periods of time.

To view the vocational difficulties of severely handicapped adults as skill deficits rather than deficits in individual potential has several implications. For the community programs which may now begin to serve these adults, this view should affect both the objectives of the programs and the persons who are selected for participation. Vocational participation and remuneration is an objective which is both feasible in community programs and consistent with professional values of normalization and individual development (Roos, Note 4). It should thus be one of the criteria on which

quality of these programs is evaluated. Further, severely handicapped adults should be selected for inclusion in more vocational programs. In the past, the feasibility criterion imposed by vocational rehabilitation agencies has prevented the severely handicapped from taking advantage of many vocational services. Functionally, this feasibility criterion has been the adult counterpart of the exclusion clause which kept many severely handicapped children out of public schools before court intervention. However, the vocational training and supervision research reviewed here suggest that lack of feasibility must be attributed more to availabilitiy and quality of vocational programs than to an inherent limit on individual potential. Gold's (1973) concern with the misuse of assessment procedures is still timely. Scores obtained from standardized tests and certain work sample procedures appear to bear little practical relationship to actual performance following training. Yet, there are considerable individual differences in response to vocational training and supervision procedures. It is clear from the research that training will be much more difficult, expensive and time consuming for some severely handicapped individuals than for others. If assessment instruments could be devised which reliably predicted the time or cost of the needed training and supervision, selection and placement decisions might be made on a more empirical basis without presupposing limits on individual productivity. A preliminary description of such an assessment effort is reported by Bellamy and Snyder (1976).

To view severely and profoundly retarded adults as potentially vocationally competent individuals has many implications for the roles of education, industry, and government. The feasibility of long term vocational goals places considerable responsibility on special education programs. Along with economic involvement, severely handicapped individuals may be able to participate competently in many aspects of community life, if they have the necessary skills. Therefore, educational programs for the severely handicapped must focus on longitudinal objectives, develop sequenced instructional goals which lead toward those objectives, and insure that the skills taught are, in fact, utilized in students' natural environments. (Brown, Nietupski, & Hamre-Nietupski, 1976; Williams, Brown & Certo, 1975.)

A response from government and industry to the vocational competence of the severely and profoundly retarded is also needed. As vocational opportunities become available to this group, they should be included in national manpower planning and considered for a variety of work possibilities that are now subcontracted outside this country. Despite tacit acceptance of the phrase "Hire the handicapped," those who are severely involved are rarely even considered as potential employees. The research and program results reviewed here suggests that this is an unnecessary exclusion.

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Meeting the Needs of the Handicapped[1]

MARC W. GOLD
University of Illinois at Urbana-Champaign

I. Introduction

When the National Advisory Council provided the title for this presentation, they left an almost limitless range of possible topics. What is handicapped? Does that include individuals who are blind and deaf or who have behaviors that give them labels such as profoundly retarded, autistic, custodial and chronically mentally ill? What are needs? Does this include full acceptance by society? By some small segment of the society? Economic viability? If, indeed, there must always be a surplus population in a capitalistic society, are the handicapped prime candidates for permanent inclusion in this pool? And if so, then what are their needs? Since vocational education and education in general have only recently begun to consider their responsibility as including those individuals who find it most difficult to learn, perhaps we had better begin by examining the concept of handicapped by distinguishing it from not handicapped or normal.

How does one get to be normal? It is not by adding a collection of things together so that one "fills up enough of his cup" to make it into normalcy. It is instead, a complex interaction between a person's competence and his deviance, that is perceived by those around him as resulting in a net positive balance. Each of us remains in his various roles as members of communities, spouses, employees, friends, etc., only so long as the significant parties to those various roles continue to perceive us as having more things about us that are wanted, needed and not readily available (competence) than those things about us that bring negative attention and must be tolerated (deviance). According to the Competence/Deviance Hypothesis: The more competence an individual has, the more deviance will be tolerated in him by others (Gold, 1975). Using job performance as an example, if one performs successfully at a task which is essential to the business, and which no one else can perform without considerable training, that individual would have to display considerable deviance for dismissal to be considered. From this perspective, a meaningful definition of "normal" or "handicapped" requires recognition of this complex interaction between competence and deviance.

The phrase, "Hire the handicapped", for example, is a self-defeating marketing strategy. No one in business or industry wishes to expend resources to carry someone on their payroll. And no one wants to be hired because of his deviance. A more facilitative slogan would be, "Hire the competent . . . and know what competence means". Meeting the needs of people who have been labeled handicapped really means to fulfill the needs of society, the needs of business and industry and everyone else, except those whose need is to always have someone who needs them. To begin to meet these needs, we need only revise two of the basic assumptions which obviously underly current efforts. First, we must move away from a strategy that focuses almost exclusively on the elimination of deviance and towards a strategy that focuses almost exclusively on the development of competence. Second, we must recognize the inherent futility of benevolence as the energy source for meeting the needs of individuals who have been labeled handicapped. Give me dignity, give me respect, but give your benevolence to someone else.

The position taken here is that virtually all of the current attitudes, assumptions, and practices in the fields of education and rehabilitation preclude genuine and full participation of severely handicapped individuals in society (Gold, 1973). Those individuals with sensory handicaps, speech defects, minor emotional difficulties and mild physical disabilities are seen as basically intact systems with malfunctioning subsystems, that is, "They're just like us but their eyes don't work, or their legs don't work." Our responsibility to these people is one which we have recently come to accept as providing the resources to give them sufficient competence to maintain a positive balance and therefore to be accepted as equally participating members of society. Since we see them as intact systems, we have no trouble justifying the expenditure of resources because of the predicted favorable cost/benefit ratio.

For those individuals with developmental disabilities, as they are currently described, individuals with moderate, severe and profound mental retardation, autism, severe physical and multiple disability, and the severely disturbed, we have a much different problem. We, as a society and a profession, view these individuals as malfunctioning systems and, as such, incapable of achieving full participation in society. We have a long standing tradition dictating how we deal with malfunctioning systems and how we deal with intact systems which contain malfunctioning subsystems. Take the automobile as an example. You step out of your home one morning, get into the car, attempt to start it and find that nothing happens. The local garage sends out a man who says the battery is dead and needs replacing, the alternator is broken and some of the wiring needs to be replaced. The car will not move but it is clear that it is an intact system and that the repair of the three malfunctioning subsystems will result in successful operation of the system. The decision is simple, fix it. Some of you may have had a different car, one that sat in the backyard,

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was without wheels, without a windshield or upholstery, and missing the carburetor, the radiator and the hood. Do you remember telling friends that the transmission was perfect? That the car had a new set of brake shoes? That the car had had a tuneup just 1500 miles ago? Of course not! This car is obviously a malfunctioning system and as such, intact subsystems, except to the junkman, are of no interest. Like the first car, the decision is simple. But, in this case, forget it, it is junk. One does not put resources into a malfunctioning system, one replaces it. There is one other car to discuss, the borderline car. It needs tires, a battery, a valve job, a new radiator and a paint job. What should you do? The only really difficult decision is deciding if it is a malfunctioning system or an intact system with a number of malfunctioning subsystems. Once this decision has been made nothing else is difficult. Once we have decided whether or not something is an intact system or a malfunctioning system that decision provides the basis for justifying either the use of resources to repair subsystems or the replacement of the system. This society has implicitly conceptualized some of its citizens as malfunctioning systems. Having done so the best it hopes to do for those citizens as malfunctioning them out of their big old wrecking yards and put them into little pretty ones. The current movement to deinstitutionalize many of these persons has, in most cases, done only this. Some of our citizens with severe retardation are now watching colored television with two other people instead of black and white television with a hundred others. They are being taken care of better, living in nicer places, but they are still in the wrecking yard. Very few of them are "on the highway". For this to happen each of them must be reperceived as an intact system with, in many cases, severely malfunctioning subsystems. To do this, we must take one subsystem, and show it to be thoroughly functioning and competent. When this happens we will then have to acknowledge that an intact subsystem cannot be observed functioning unless it is existing within a basically functioning system. Vocational skill performance is just such a subsystem. When we did an experiment to train individuals with severe and profound retardation, who are also blind, to assemble a complex industrial task (Gold, 1976), the ward staff who brought them to the research room, upon seeing them successfully assembling the task, asked why, if these individuals could do this, did they have to be dressed, fed and transported all of the time? Since then, all of these skills have been taught to these individuals. Once competence is demonstrated one cannot help but look for more competence.

Meeting the needs of the handicapped requires, then, identifying relevant societal values, priorities and resources. Strategies must be developed with a strong awareness of the context in which individuals with handicapping conditions will exist. The following section attempts to provide some description of the current context.

II. Current Trends and Their Implications

The field of education has long suffered the bruises of jumping on and falling off of bandwagons. Many of these bandwagons have a reasonable, conceptual and empirical foundation. The unit approach to teaching social studies (e.g., Ingram, 1953) the phonics method of teaching reading (e.g., Chall, 1967), and open classrooms (e.g., Featherstone, 1971) all might be so described. The problem with these becoming bandwagons has been that school systems have jumped on without learning how the wagon was constructed or where it was going. The results have been unfortunate.

The current movement to "mainstream" individuals who have been labeled handicapped is an interesting example (e.g., Birch, 1974). The basic notion is that pupils who have been served in special classes should be served in regular classes along with pupils who have not been so labeled. Support for this movement has included more than a dozen efficacy studies which failed to show significant advantages of special class placement for children labeled educable mentally retarded (See Kirk, 1964), litigation questioning the constitutionality of selection procedures for special classes (e.g., Bailey, 1972; Rosen & Solozanis, 1974) and budgetary considerations. Observation of most attempts to provide vocational education for handicapped individuals shows a lack of awareness of this literature. Most of these attempts still segregate individuals with special needs into classes that are just for them and, in some cases, schools that are just for them. Attempts to meet the requirements of legislation calling for the expenditure of ten percent of federal funds to meeting the needs of individuals with handicapping conditions have also tended to be either segregated programs or outright misuse the funds. The position taken here is that programs for normal individuals show a lack of systematic training strategy. Pupils are exposed to machinery, procedures and techniques and, with little assistance and carefully planned instructional technology, acquire enough information to satisfy those evaluating such programs. This may be fine for normal students, but under these circumstances, it is no wonder that individuals with special needs have been viewed as unsuccessful when integrated into these programs. For individuals with mild handicapping conditions, a shift by vocational educators to a more structured and carefully designed instructional environment for all students would allow individuals with special needs to enjoy success in an integrated circumstance and would probably yield significant increases in the skill capabilities of normal students in such classes.

For students with more severe handicapping conditions, the issue is more complicated. Under what organizational structure should these students be taught? The tendency, as with so many of the other movements, is to oversimplify, in this case, the distinction between mainstreaming and special class placement, as a simple dichotomy. Also, as with many of the other movements, the basic issue of what is best for the

student has obviously been a low priority consideration. Decisions on where to teach should be based on the specific pieces of learning, information or skills with which a community wishes the students to leave school. Then, for each of those, decide where and how they are best taught. This will result in an organizational structure where the individual who has difficulty learning will acquire some skills along with individuals who do not have such difficulties; will acquire other skills with individuals who have problems similar to his; and will acquire yet other skills through individualized instruction. One need only listen to the compelling arguments on both sides of this issue to realize the need for a continuum of options. The development of these options by vocational educators might be one step in their pursuit of a leadership role in education.

Right to Education is another current bandwagon in education. This movement got its start in Pennsylvania where the courts mandated that the educational system of the state serve all school age pupils (PARC, 1971). One by one, most states are now legislating such action so that, on an increasing basis, schools will be required to provide services and programs for all school aged individuals including those who are most difficult to train. While there seems to be a general consensus that such individuals have a right to education, there is considerably less of a consensus as to whether or not the public school should be the service entity providing this education. In any case, children categorized using the educational jargon "trainable" and "subtrainable" will eventually be an integral part of our public school systems. Will we meet the letter of the law by simply having them there or will we develop viable programs for doing something with them? Vocational education, again, has the opportunity to provide important leadership in the development of programs which can have more of an impact on the lives of the individuals to be served than any program has ever had, the difference between societal existence or custodial care.

Another current trend which can contribute to both mainstreaming and Right to Education activities is the developing cooperative relationship between vocational education and special education. This trend, which began originally between vocational rehabilitation and special education, through the efforts of Charles Eskridge in Texas more than a decade ago (Eskridge & Partridge, 1963) seems to finally be a part of many public school and university efforts involving vocational programs for individuals with mild and moderate developmental disabilities. A current example is the series of National Workshops on Special Needs Vocational Teacher Education developed by Ruper Evans at the University of Illinois. The first workshop, held in 1975, received application from over 70 institutions throughout the country, a strong indication of interest in this area. Another aspect of these conferences, of particular interest here, is that the impetus for this activity came from the vocational education sector rather than from special education, as has tended to be the case. The tendency, in fact, throughout this movement has been to pawn off the responsibility to special educators. To successfully address this problem, it is going to require full utilization of all of the resources and knowledge of both of these disciplines and probably some others, also.

From the special education side of this coalition individuals such as Gary Clark (e.g., Clark, 1974), Donn Brolin (Brolin, 1976), William Younie (e.g., Younie & Clark, 1969), Charles Kokaska (Kokaska, 1974), and others have begun to increase the communication between these two disciplines and establish priorities and goals out of which some programs have begun to emerge. With the exception of programs for the deaf, the overwhelming majority of the work that has been done as a cooperative effort has been limited to service to individuals with mild handicapping conditions. Although there are now more students receiving better service, expectancies for the vocational capabilities of individuals emerging from such programs have remained not much different than they were prior to cooperative programs being established. At present, then, there is a good base from which to build programs giving individuals with mild, moderate and severe handicapping conditions a better crack at the world of work than they have ever had before.

Another trend in the delivery of services to persons with handicapping conditions is the overwhelming emphasis on quantity at the expense of quality. Limited resources, a legitimate interest in serving all of those individuals who need service, the need to focus initially on the acquisition of basic resources such as space, staff, equipment and funds, have all mitigated against the development of quality services. It seems that each time a program finally has the resources to move into quality programming, a decision is made to drain resources away to expand the program quantitatively. The result has been, for the most part, that many more individuals in many more places are receiving services but the services they are receiving are usually no better than what a fewer number of people received in the past. This strategy should be changed. We should be improving services not just giving them to more people. The demonstration of major significant performance by individuals who have been labeled handicapped, especially severely handicapped, is a more viable strategy to increasing available resources than showing little or no growth in many individuals (Gold, 1973). This strategy is not made easier by the other trends mentioned which have called for access to available resources by all individuals concerned. The long range goal of high quality service to all individuals in need of such service, however, is more attainable if we focus on quality first and quantity second.

The last trend discussed here relates to vocational training strategies. Almost all of the "strategies" found in programs are actually organizational structures rather than strategies, for example, on-campus work

experience programs, on-the-job training, classroom instruction and real or simulated workshop experience. The focus of attention has been on these organizational structures rather than on the actual instructional technology to be used in those settings. The result has been that most learning which has occurred resulted from exposure in these settings rather than from systematic and carefully designed manipulations of these various environments. It is to our advantage to have a wide range of organizational structures available within which to provide training, however, none of these structures will carry us very far in the absence of well-developed instructional technologies.

These trends simultaneously point up the tremendous growth we have undergone in the last twenty years and the urgent needs for significant and major changes in what we are doing: We've come a long way, baby, but we've got a long way to go.

III. The Future: What Might It Be Like?

The list below reflects a firmly entrenched optimism. For those who do not share this optimism a different list would have to be developed.

1. The proportions of unskilled, semi-skilled, skilled and professional jobs in this country will remain basically unchanged, however, specific jobs within each of these categories will come and go (Nixon, 1970). Decisions regarding the training of any individual, no matter how handicapped he/she is perceived to be, will rest on a carefully arrived at decision as to whether or not a job can be subdivided into teachable components rather than on some general feeling about the complexity of the particular job, as is now the case (Gold, 1976). The result of this will be that individuals with all kinds and severities of disabilities will be found in a tremendously wider variety of positions than is now the case.
2. Vocational training programs for persons who have been labeled handicapped will contribute individuals to the labor pool who are so clearly competent at a wide range of specific functions that those things which would previously have kept them from opportunities in the world of work will do so no longer. Business and industry will come to recognize the advantages of revising their recruitment, hiring, training and supervisory practices so as to gain access to this valuable new labor source.
3. The Protestant Ethic will continue to lose ground but a person will continue to be known by what that person does for a living (Parker, 1971). For those individuals in whom observable deviance is minimal or nonexistent, acceptance by members of society and community will continue to be enhanced but not determined by their vocational contributions. Individuals with observable deviance, especially those with severe disabilities, will come to be seen as thoroughly participating members of society and of communities, peers in virtually every respect, first through their contributions to the economy, and second, through the same mechanisms as the rest of us, once society has reason to look beyond those things that have distracted us.
4. The proportion of life skills that individuals acquire outside the school will increase. For some kinds of learning this means that schools will continue to develop activities outside of the school building and be involved in the use of those activities. It will also mean that schools, as entities, will contribute less and less to the educational process. Other viable teaching entities will include community groups, private enterprise, television, private individuals and a wide range of individual and group auto-instructional activities. Following some adjustment problems, schools will take the opportunity to significantly increase the quality of instruction in those areas that continue to remain responsibilities of the schools to teach.
5. Sheltered workshops will continue to be a significant part of the vocational lives of individuals with severe handicapping conditions. They will undergo major changes in their operational philosophies and practices or go out of existence because of poor business practices and a lack of public support. As sheltered workshops begin to show their capabilities to provide genuinely meaningful training and work to individuals with severe handicapping conditions they will become defined as special places where normal work is done instead of places where substandard work is done. Vocational education and special education will utilize sheltered workshops, however, the use of sheltered workshops as a convenient dumping ground for individuals with mild handicaps will cease.
6. Post-high school education will be utilized more and more to obtain information not specifically related to vocational goals. Self-help skills, crafts recreation and other aspects of adult life will be pursued in adult education programs, colleges and universities. Public schools will begin to focus more on providing the groundwork for this kind of adult and continuing education. Vocational educators might expect to be held increasingly accountable for providing all individuals with a broader set of basic skills such as tool useage, home and auto repair, practical measurement skills and, perhaps, an even wider range of specific practical skills. The development of effective, efficient programs to meet these needs should include the teaching of these skills to all individuals with special needs served by public schools.
7. The whole issue of accountability is one that will have to be increasingly addressed by vocational educators. As advocacy continues to increase in popularity in this country, we can expect communities to become more and more demanding of benefits resulting from vocational education programs.

If vocational educators maintain a leadership role in recognizing changing societal value structures and in addressing them, then they can maintain control over their own destiny. If societal needs are not addressed, however, vocational educators will find their options constrained by mandates. The mandates to spend ten percent of all federal vocational education funds on the handicapped and another fifteen percent on the disadvantaged are clear examples. If vocational educators had initiated strong, visible programs for such individuals, these mandates would have never come about. Passive leadership at this time in our development will probably result in more and more constraint on the options open to vocational education programs.

8. Pluralism will continue but the rules of the game will improve. Most of us in vocational education, special education and other disciplines and professions have spent all or most of our careers existing in a booming economy. Rapid program development has been the rule rather than the exception and, only recently, has there been strong demand for cost-benefit justification. It seems reasonable to assume a stable but not rapidly growing economy, and that this set of circumstances will remain for a long period of time. If this happens, all of us special interest groups will be competing more than ever for available resources. The combination of the advocacy movement, limited resources, increased political accountability and public awareness in general should result in funds being distributed on the basis of demonstrated effectiveness in meeting current societal needs. If vocational educators are able to demonstrate major gains in the quality and quantity of skills in the people they serve, utilizing the resources they already have, they should expect a front row seat at the trough. Those disciplines that continue to demand more and more support in the absence of clear cut effective utilization of existing resources will probably die.

IV. Conclusion

We are an enlightened, capitalistic society. We believe in the profit motive and in private enterprise to a point beyond which we become offended. We continue to have faith in the democratic process, but our minorities are becoming increasingly important to us. Each of us has special interests, as has always been the case, but we each probably have more special interests than people have ever had before, allowing us, as a society, to broaden our acceptance of divergent points of view.

The boundary conditions of normalcy continue to undergo major expansion. In almost every aspect of our existence we have modified what we believe normal to be. For each of these, what is normal now? Marital status? Sexual preferences? Hours worked per week? Years of schooling? Longevity at your present job? How many friends does the average person have that have things about them that might cause them to be labeled handicapped? What is normally thought when someone gives birth to a child with a major problem? Which political party is right?

In our lifetime people who are very different than people most of us have ever really known, lovely people, will be moving into our communities, living next door to us, growing up in our families, marrying our children and interacting with us in every conceivable way. Doesn't it make sense that they should have everything we have in the way of the opportunity to make it? Vocational educators could provide these citizens with many of the critical skills needed for full successful participation in society. For many of these skills vocational educators are the only logical and competent source.

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Community Transportation: Teaching Moderately Handicapped Adults to Ride the Champaign-Urbana Mass Transit System [1, 2]

IRENE H. CARNEY, BRUCE M. MENCHETTI and FRED P. ORELOVE[3]
University of Illinois at Urbana-Champaign

With the advent of more normalized living arrangements for handicapped adults, it becomes necessary to focus training efforts on community survival skills. One of the most functional skills for individuals living in apartments or group homes is the ability to travel independently to shopping, vocational, medical, and recreational facilities within the community. While several transportation alternatives exist, the local mass transit system is the most logical choice of transportation due to its practical, economical, and ecological advantages.

Several investigations have published results of programs to train handicapped individuals to use the public bus systems. Cortazzo and Sansone (1969) report that over a three-year period they trained almost 200 retarded adults to travel independently to and from a day activity center. These authors developed a screening procedure for selecting those candidates for training who would be likely to show success. Their technique yielded a pool of trainees who possessed a fairly sophisticated repertoire of social behaviors (e.g., "moves freely about immediate vicinity of home and neighborhood", "acts independently without being prompted"), but left unanswered the question of whether the training technique would apply to a more handicapped population. An additional criticism of the Cortazzo and Sansone procedure is that they failed to test for the application and generalization of bus-riding skills to novel, untrained destinations within their community.

Lupei (Note 1) also presents a task analysis and a token reinforcement system to develop transportation skills in severely handicapped students. Although the analysis is fairly complete, the program may be criticized for its over-reliance on simulated activities (e.g., using a mock bus, training travel to a limited number of teacher-selected destinations, and employing tokens as consequences for correct responding). An examination of basic components of instructional programs for severely handicapped students (Williams, Brown, & Certo, 1975) suggests that the use of more functional, natural training procedures (e.g., training on actual public buses, using the natural reinforcer of reaching a desired destination) is especially important in developing durable community survival skills in severely handicapped students.

A more functional and naturalized procedure for training bus-riding skills in severely handicapped students is presented by Certo, Schwartz, and Brown (1975). The authors task analyzed the Madison, Wisconsin transit system into components and trained their students to ride the bus to obtain food, clothing, recreation, and medical assistance. To maximize safety and efficiency, pre-training was conducted in the classroom using a mock bus and videotapes and slides of destinations and landmarks before actual bus-riding in the community was begun.

Apart from the strengths and weaknesses of the three bus-riding programs cited, each suffered from the inevitable shortcoming that it was designed to train individuals to ride the bus system specific to the authors' communities. Since many aspects of a mass transit system indeed vary across location (e.g., number and names of routes, required fare) it is necessary that certain parts of bus-riding programs be adapted to the particular community in which training is to take place. Though perhaps less useful as an exportable training package, a program that is community-specific is nonetheless the most functional for severely handicapped students since it trains them on concrete, useful skills, the performance of which will significantly affect their day to day functioning. For a bus-riding program to permit its users to achieve a maximum degree of independence within a community, provisions should be made for teaching general strategies of using the system.

The present task force was designed to teach moderately to severely handicapped individuals to employ a general problem-solving approach for using the mass transit system to travel independently to both trained and novel destinations within Champaign-Urbana, Illinois. It is also an attempt to construct a bus-riding training program specific enough to be used within a given transit system and at the same time general enough to be adapted by other communities with minimal revision.

METHOD

Project Development Guidelines

This section describes those activities that need to be performed by the trainers prior to actual implementation of the bus-riding program. Since the present task force was carried out as an independent project

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[3] Authorship should be considered equal.

by student trainers not affiliated with the private agency serving the trainees, several steps were required which would have been unnecessary had the program been initiated by agency staff. In addition, trainees were adults living independently in the community, so parental involvement was not necessary. Although the following guidelines were written from this view, attempts have been made to make them applicable to staff training a younger, public school population.

I. Securing Information and Enlisting Support from Parents or Agency.

A. Secure cooperation of agency or school district.

In situations when the trainers are not affiliated with the agency involved, a meeting must be arranged between the trainer(s) and a representative of the agency or school district in which the training program is outlined. A written proposal covering at least the following areas should be presented to the agency representative:

1. Brief description of program
2. Rationale
3. Goals
4. Approximate number of trainers and trainees
5. Trainer expertise
6. Approximate length of project
7. Anticipated cost to agency and Mass Transit District (MTD), e.g., film, supplies
8. Commitment required of MTD (e.g., use of stationary bus)
9. Commitment required of agency (e.g., equipment, space)
10. Projected "pay-offs" for agency and MTD involvement (e.g., inservice training for staff, publicity)
11. Description of any permanent products to be developed
12. Purposes for which data will be used
13. Benefit to clients

A written proposal such as described above may also be necessary when a staff member wishes to institute a bus-riding program in order to justify projected expenditures.

B. Select candidates for bus-riding training.

The trainers should meet with the appropriate staff to select trainees for the program. Selection criteria may be established based on any of a variety of factors, e.g., likelihood for success, necessity of the skill for a particular person, or possession of prerequisite academic and social skills.

C. Obtain participant consent forms.

These forms should be signed by the trainee, parent or other responsible party prior to program implementation to protect the trainer from liability in the event of a mishap. These forms should indicate that the person signing understands the nature of the specific program planned.

D. Secure release of information forms.

When signed by the trainee or responsible party, these forms give the agency permission to release information which the trainer would find helpful for assessment and training (e.g., academic skills, medical problems). These forms are necessary only when the trainers are not affiliated with the agency, as in the present report.

E. Obtain information on medical and physical problems or limitations.

Some physical disabilities which might necessitate special adaptations of the training procedures include orthopedic impairments (use of a wheelchair, crutches, or braces), sensory impairments (visually or hearing impaired), and health problems (e.g., seizures, cardiac condition).

F. Determine liability coverage.

Since insurance laws vary by state, it is strongly recommended that a public school district or other group wishing to institute a community-based bus-riding program contact its liability carrier and devise a plan which provides sufficient coverage. There are two components of bus-riding for which liability coverage must be considered:

1. Transporting student in private vehicles to and from bus stop. The major variable affecting amount and type of insurance in this situation is the ownership of the vehicle. It is possible that a trainer transporting students in his/her private vehicle may not be protected against liability. There generally is no problem, however, with using the school's or parent's vehicle.
2. Accompanying students on the public buses during training. The bus company should be contacted to determine if they would require the program to carry special insurance. If the schools do not sign a special contract with the bus company, the company's own insurance should suffice to cover any mishaps that might occur during the course of training.

G. Determine an appropriate list of destinations for each trainee.

Rather than train students to ride to arbitrarily selected destinations, the trainer should discover specific desirable and appropriate destinations which might commonly be used by the trainee. The destinations will probably fall under the categories of entertainment, medical care, shopping (general, clothes, and grocery), work, and the homes of relatives and friends.

H. Determine emergency procedures.

In the event that the trainer or trainee needs emergency help during bus training (e.g., the trainee becomes separated from the trainer), the trainer should determine emergency procedures in advance, including appropriate agency and community contacts.

I. Address parental/staff concerns.

Staff and parental apprehension about a trainee's learning how to ride the public buses could be the most difficult problem the trainer faces in the initial stages of establishing the program. It is recommended that the trainer take the time to explain the program carefully without stressing the problems that could potentially ensue. It probably would be sensible to refrain from discussing everything during the first meeting, but instead to gradually introduce various components to the parent or staff as they agree to each one in turn.

J. Arrange for location and scheduling of assessment and training.

The trainer should arrange with the parent or agency staff times and places convenient to both parties for the assessment and training of bus-riding. If possible, the times chosen should be those which fit into the trainee's natural schedule, e.g., training on taking the bus to work should be done in the morning and should start at the trainee's home. The criterion of ultimate functioning (Brown, Nietupski, & Hamre-Nietupski, 1976) dictates that training should occur in the environment in which the behavior is eventually expected to occur. It cannot be assumed that a behavior exhibited in one situation will generalize to another.

K. Establish channels for reporting progress.

The trainer should determine a system for regularly conveying information to the parents or staff regarding progress and/or problems encountered during training. This may be very informal (e.g., periodic phone contacts) or more highly structured (e.g., weekly written progress reports and periodic meetings), as deemed appropriate. This step is important in maintaining rapport and increases the probability of arriving at mutually agreeable solutions to problems arising in training.

L. Provide "pay-offs" for agency participation.

When trainers are not directly affiliated with the agency, providing "pay-offs" for agency participation will help to maintain agency support for the project and continued good relations. Some "pay-offs" for the agency might include:

1. Carrying out inservice training programs for agency staff
2. Written expression of appreciation to agency board of directors (or school board), local newspaper(s)
3. Placing feature articles in newspaper publicizing training program and agency
4. Providing copies of any permanent products

II. Securing support from the Mass Transit District.

This is an important step both to ensure the success of the specific tra ning project and to foster good relations between the MTD and handicapped riders for the future. An especially good time to approach the MTD seems to be immediately preceding or following a referendum on public transportation. The current task force was instituted shortly after the passage of the Champaign-Urbana MTD referendum. Since one provision of the referendum was for greater service for handicapped riders, the MTD personnel were especially receptive to the training proposal presented.

A. Establish contact with the Managing Director and/or Public Information Representative.

The trainer should outline the training plan and present a written proposal to the MTD representative. This proposal may be similar to the one presented to the agency representative (See A.1., above).

B. Obtain information on MTD operations.

Information including routes, timetables, rules, safety measures, policies concerning handicapped passengers, insurance coverage, emergency procedures, availability of buses equipped for wheelchairs, and the requirement for exact change, should be obtained from MTD representatives once the proposal has been accepted. Since, in the present situation, an MTD referendum had recently been passed, additional information was required to determine whether modifications would be necessary in the original training package. This included plans for: location of new routes, changes in existing routes, special bus adaptations, special passes for the handicapped (appearance, cost, qualifications, where to purchase), policy changes, and night service.

C. Request materials and permission for activities to support training.

The MTD personnel are in a position to provide a number of natural training materials free of charge including:

1. Tokens for trainers and trainees
2. Bus stop signs
3. Special maps
4. Pictures of buses, passengers boarding, etc.

In addition, permission was requested to take pictures aboard a bus and to use a stationary bus for training bus parts.

D. Provide "pay-offs" to the MTD for their cooperation.

It is important that the trainer reciprocate by offering to aid the MTD in providing services to handicapped passengers. Some activities might include:

1. Helping to construct a training manual for serving handicapped people for MTD personnel;
2. Helping to design/field test physical modifications in the buses to accomodate physically disabled riders;
3. Publicizing the training program within the community as a means of public relations.

In addition, a written expression of appreciation to the MTD for their cooperation would be appropriate.

A letter should also be sent to the local newspaper to provide public recognition for the MTD.

Trainees

The training program was field tested with two moderately handicapped women who are living in an apartment in Urbana, Illinois. These women rode the bus to work each morning with the help of their nonhandicapped roommates but were reported by their caseworker to be unable to ride independently. It was decided that a bus-riding program would be especially appropriate for these people since they already had the basic bus riding skills in their repertoires. A bus-riding program training novel destinations would allow them a greater degree of independence in the community.

An assessment of the trainee's bus-riding skills revealed that the trainees were unable to tell which buses to take to specific destinations, did not have the time-telling skills to read a bus schedule nor determine from a clock when to leave home to catch a bus, and were lacking in sight-word recognition of bus route names. On the basis of this information the route map and schedule were modified for use with people who had minimal sight-word recognition and no time telling skills.

Materials

The following materials were used to assess and train students in the present project. Some materials may have been superfluous while others may have been omitted. In general, the exact materials required will depend upon the sophistication of the trainees and the particular bus system within which training takes place.

Color slides of destinations, bus stops, and landmarks
Color photographs of destinations (for route cards)
Flash cards: numerals (0-12), colors, sight words (for bus lines, route card labels)
Kitchen timer (optional)
Trainee's watch/clock
Modified map: hand drawn folding map with separate 3"x5" index cards listing route schedules
Route cards: plastic coated 5"x7" index cards with attached photograph and printed information

Modifications of MTD Map and Schedule

While it would be possible to train an individual to use public transportation by choosing a finite set of destinations and teaching the trainee to go to the correct bus stop and wait for the next bus, such an approach has at least three serious disadvantages:

1. It may result in trainees waiting for a bus for very long periods,
2. It provides the trainees with skills needed to travel to only a limited number of destinations, and
3. It does not provide skills which generalize to travel to and from novel destinations at previously untrained times.

In order for bus-riding skills to have general utility, the rider must have a general problem solving strategy to allow him/her to determine bus lines, bus stops and times for traveling other than those on which s/he has been specifically trained. For nonhandicapped riders in Champaign-Urbana, this strategy is provided in the form of a map and schedule printed by the Mass Transit District. The standard map and schedule is extremely complex however, requiring at least the following skills:

1. Knowing the address of the destination
2. Reading the small print on the map to find the street name
3. Locating the bus stop nearest the present location where the correct line can be caught
4. Determining whether a transfer is involved
5. Turning to the back of the map to find the detail for the correct transfer interchange
6. Knowing the direction from the bus stop in which the destination is located in order to locate the appropriate (e.g., eastbound, southbound) schedule
7. Reading words for route direction (e.g., eastbound, southbound, etc.), route names (e.g., lavender, grey, red), abbreviations (e.g., street names), and destinations (e.g., street names, landmarks)
8. Extrapolating times from stops listed on the schedule to determine intermediate bus stops
9. Reading digital clock times
10. Calculating the amount of time needed to travel from home to the bus stop.

The current program provides a general problem solving system for handicapped riders in the Champaign-Urbana Mass Transit District by modifying the standard map and schedule. Two levels of simplification, based on the trainee's entering skills, were developed: (1) a map and schedule with minor modifications for use by those trainees who could read and tell time, and (2) a "route card" designed for use by those with no time-telling skills and a limited sight-word vocabularly.

One of the trainees with whom the transportation training procedures were tested had neither sight-word reading ability nor time-telling skills while the other could label relevant sight words but could not tell time. Consequently, the field test training was conducted using the more restrictive of the two modifications, the route card.

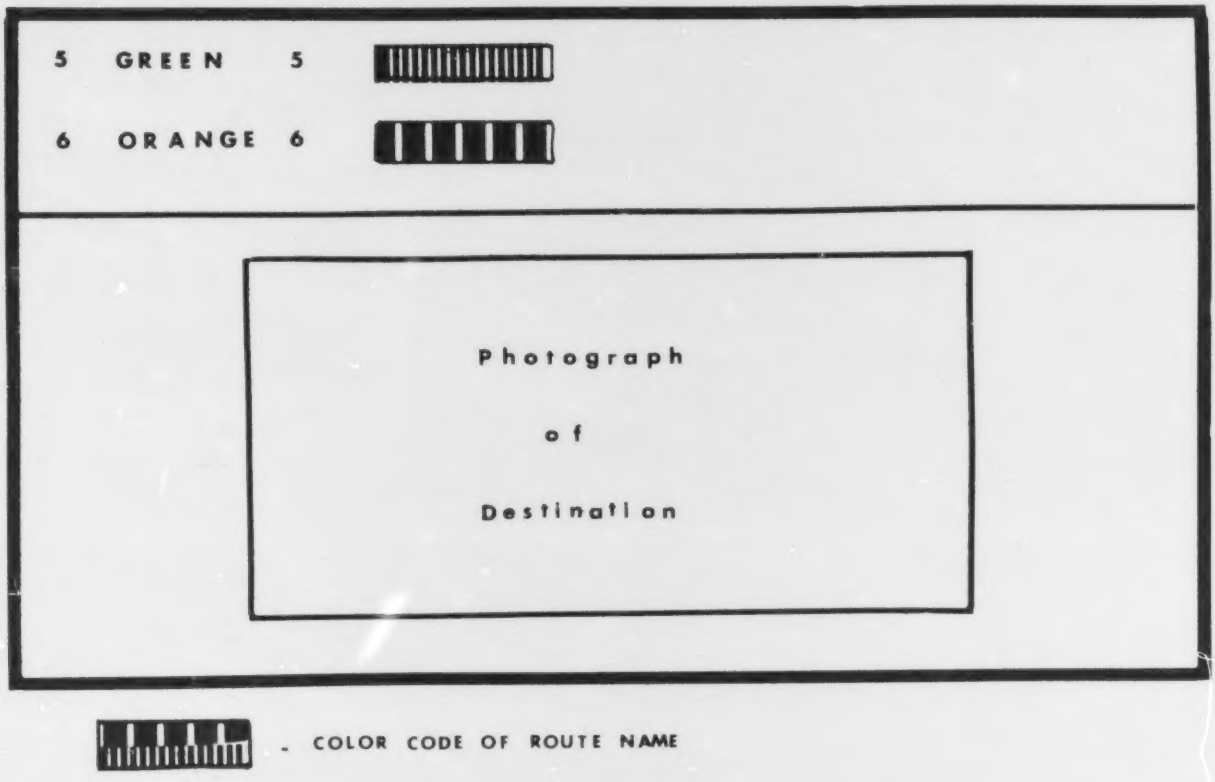
Route cards. These cards simplified the presentation of the MTD map and schedule information by:

1. Providing a photograph of the destination and listing routes required, thus eliminating the need for knowing or reading street names.
2. Providing color code of the bus routes with the name of the routes.

Two types of route cards were constructed, according to the nature of the destination. For those

destinations, such as shopping centers, which required no fixed time of arrival and could be reached by several routes, the trainee needed only to know which line s/he could take and where to meet them. Cards for such destinations included only this information and omitted details regarding arrival/departure times. An example of this type of route card is presented in Figure 1.

FIGURE 1. Sample route card used when arrival time at destination was flexible (e.g., bus to shopping).



For other destinations, more detailed route cards were required because of one or more of the following conditions:

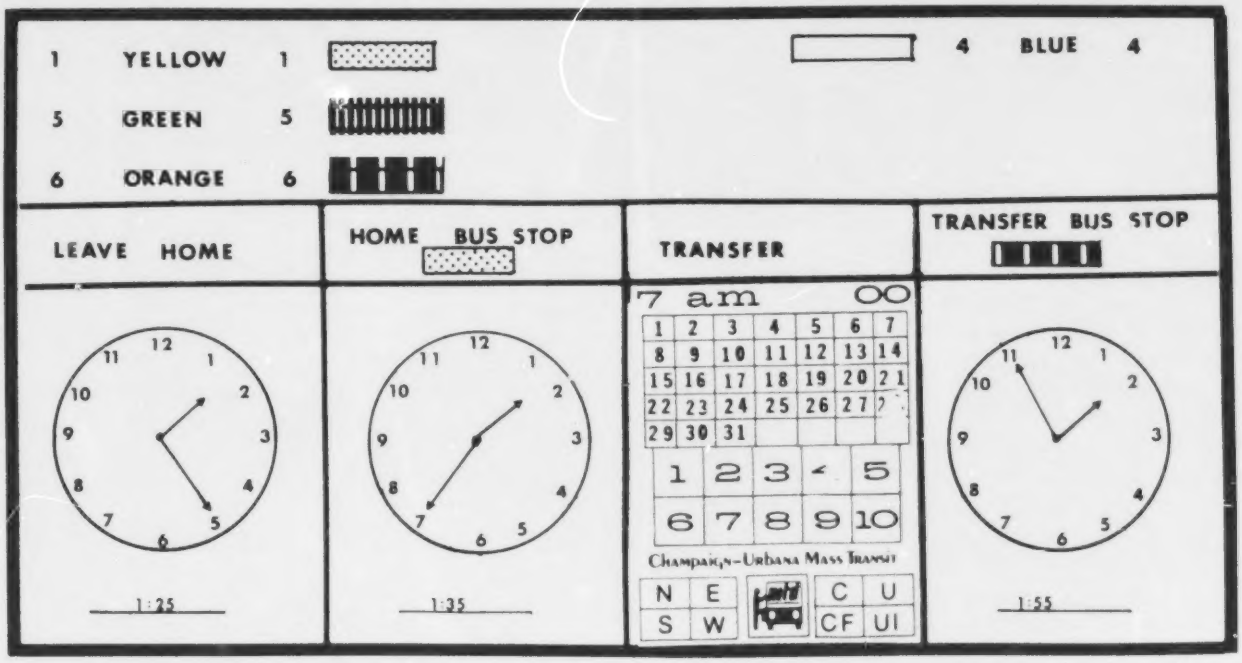
1. Trainees were required to arrive at the destination by a particular time (e.g., work, doctor's appointment);
2. Bus service to the destination was infrequent (and thus could require a long wait by the trainee);
3. A transfer was required to reach the destination.

Information for this type of route card was simplified by:

1. Pairing departing times on clock face with the digital clock time;
2. Indicating the need to transfer by including an actual transfer on the card;
3. Presenting specific times for departing from home, and catching the first and transfer buses.

Picture of Destination on opposite side of card.

FIGURE 2. Sample route card used when trainee needed to meet bus and arrive at destination at regular, specific times (e.g., bus to work).



An example of this type of route card is presented in Figure 2.

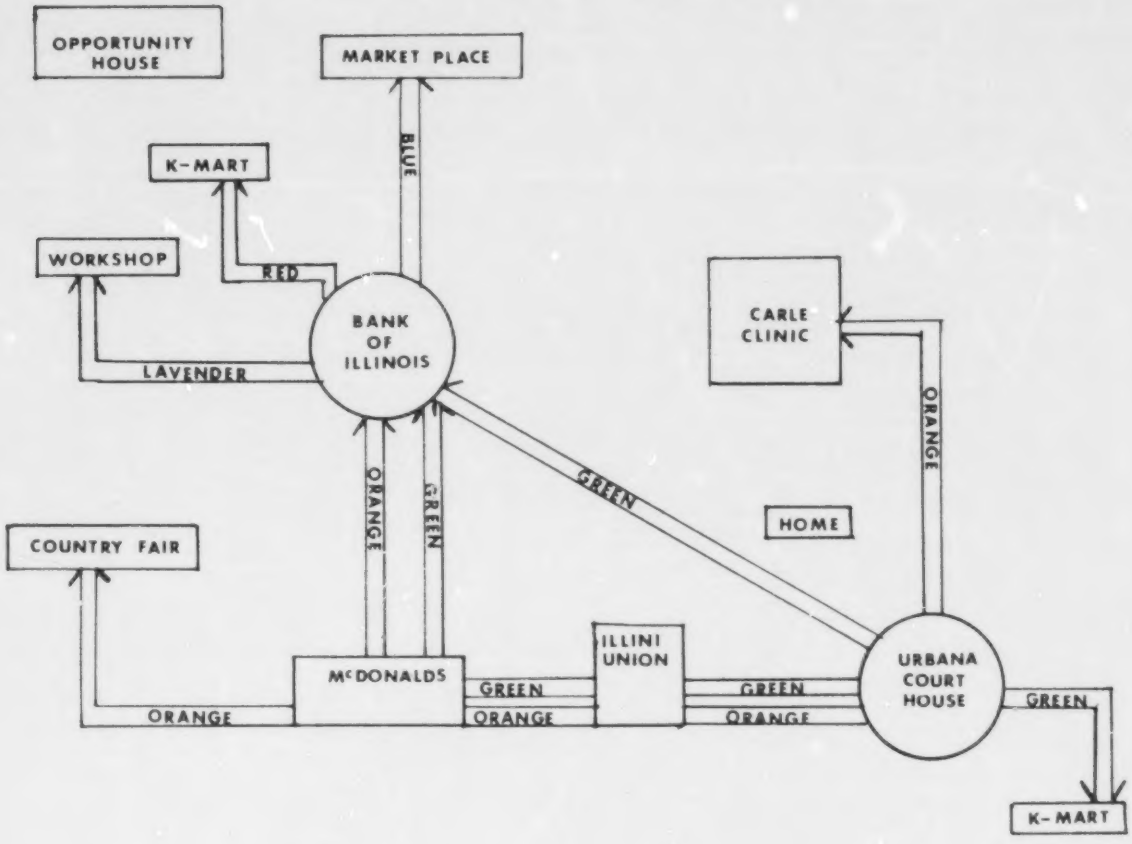
The use of route cards may be faded as trainees acquire more sophisticated reading and time-telling skills. A less restrictive information prosthetic, the modified map and schedule, may then be used.

Modified Map and Schedule. This alternative requires fewer modifications than the route cards and is designed to simplify the MTD map and schedule by:

1. Eliminating the background of streets and extraneous routes;
2. Providing a map with specified destinations and stops in place of street names;
3. Identifying times for stops at specific destinations and landmarks instead of street names;
4. Adding a column for the time of departure from home;
5. Providing distinct schedules, marked by destinations, for eastbound and westbound trips of the same colored line;
6. Providing a separate portable card with the schedule of the return trip.

A sample modified map and schedule reduced in size is presented in Figure 3.

FIGURE 3. Sample modified map and schedule.



6 ORANGE 6				
LEAVE HOME	COURT HOUSE	CARLE	UNION	BANK OF ILLINOIS
7:30	7:39	7:45	7:48	7:55
11:55	12:04	12:10	12:12	12:19
3:00	3:09	3:15	3:17	3:24

5 GREEN 5			
LEAVE HOME	COURT HOUSE	UNION	BANK OF ILLINOIS
7:55	8:09	8:16	8:23
12:40	12:50	12:57	1:04
3:10	3:20	3:27	3:34

5 GREEN 5		
LEAVE HOME	ACROSS FROM COURT HOUSE	K MART
9:15	9:24	9:40
12:45	12:55	1:10
2:45	2:55	3:10

Slot with Schedule for returning home.

Procedures

Assessment. Before participating in transportation training, each trainee was pretested to identify those prerequisite and bus-riding behaviors that were already in the trainee's repertoire and those that needed training. Agency reports and informal testing were employed to verify that the trainees possessed the behaviors which were prerequisite to entering this program. The assessment instrument used for the evaluation of the trainee's ability to perform each step of the training sequence is presented in Table 1. The evaluation instrument is divided into three columns. The first two columns specify the materials used and verbal cues performed by the trainer and the third column identified the necessary trainee response. Assessment items were scored as passed if a trainee performed the task correctly on two consecutive presentations.

TABLE 1. Assessment of skills administered prior to and following bus-riding training.

PHASE I: PRE-RIDING SKILLS

Trainer Behaviors		Trainee Behaviors
Materials	**Verbal**	
Part 1: Recognizing MTD Bus Stop.		
Present MTD bus stop sign with 2-3 other common signs.	"Show me the sign for the bus stop."	Points to MTD bus stop sign.
Part 2: Selecting correct fare.		
1.	"How much does it cost to ride the bus?"	Answers 25¢ or "one token."
2. Present array of coins and token.	"Show me the quarter."	Points to quarter.
3. Present array of coins and token.	"Show me the token."	Points to the token.
4. Present array of coins and token.	"Find all the coins that will allow you to ride the bus."	Points to quarter, token and correct combinations of change.
Part 3: Discriminating functional bus parts.		
1. Stationary MTD bus.	"Show me the front door."	Points to front door.
2. Stationary MTD bus.	"Show me the front steps."	Points to front steps.
3. Stationary MTD bus.	"Show me the fare box."	Points to fare box.
4. Stationary MTD bus.	"Show me the seats."	Points to seats.
5. Stationary MTD bus.	"Show me the pole/handrail."	Points to pole/handrail.
6. Stationary MTD bus.	"Show me the signal cord."	Points to signal cord.
7. Stationary MTD bus.	"Show me the rear steps."	Points to rear steps.
8. Stationary MTD bus.	"Show me the exit signal light."	Points to exit signal light.
9. Stationary MTD bus.	"Show me the rear door."	Points to rear door.
Part 4: Identifying route names.		
1. Present 3 sight-word cards selected from: LAVENDER, YELLOW, GREEN, GREY, BLUE, ORANGE, AND RED.	"Show me the word that says _____."	Points to correct word.
2. Repeat, changing set of sight word cards.	Repeat until each route name has been requested.	Points to correct word.
Part 5: Identifying numerals.		
1. Present flashcard with a numeral from 0-12 on it.	"What is this number?"	Labels numeral correctly.
2. Repeat, until each numeral from 1-12 has been presented.		
Part 6: Identifying colors.		
1. Point to a color from the following: lavender, yellow, green, grey, blue, orange, and red.	"What color is this?"	Labels color correctly
2. Repeat, until each color listed above has been presented.		
Part 7: Recognizing landmarks.		
1. Present slides of 3 landmarks (1 correct and 2 distractors) in random order.	For each landmark ask: "Is this where you get off the transfer bus?"	Answers yes or no correctly.
2. Present slides of 3 landmarks (1 correct and 2 distractors) in random order.	"Is this where you get the transfer bus?"	Answers yes or no correctly.
3. Present slides of 3 landmarks (1 correct and 2 distractors) in random order.	"Is this where you get off the home bus?"	Answers yes or no correctly.
4. Present slides of 3 landmarks (1 correct and 2 distractors) in random order.	"Is this where you get the home bus?"	Answers yes or no correctly.

PHASE IIA: USING THE ROUTE CARD

Part 1: Determining the destination.		
1.	"Where do you have to go?"	Gives correct answer.
2. Present box with route cards.	"Find the route card for (*destination*)."	Selects route card with picture named.
Part 2: Using the route card.		
1. Indicate route card.	"Do you have to transfer to go to (*destination*)?"	Looks at bus lines or for word "transfer" and gives correct response.
2. Indicate route card.	"What buses do you take to get to (*destination*)?"	Lists names of all bus lines provided on card.
3. Point to first clock.	"What do you have to do at _____ o'clock?" (indicate time on clock in first column.)	"Leave home."

TABLE 1. Assessment of skills administered prior to and following bus-riding training. — (Continued)

	Trainer Behaviors	
	Materials	**Verbal**
4. Instruct T to compare watch with first clock on route card.		"Are the clocks the same? Is it time to leave home?"
a. when times are different.		
b. when times are the same.		

Trainee Behaviors
(a) answers "No."
(b) answers "Yes."

PHASE IIB: USING MODIFIED MAP AND SCHEDULE

Since neither trainee possessed the prerequisite digital time-telling and sight-reading skills, the evaluation device was not completed for this phase.

PHASE III: RIDING BUS and PHASE IV: RETURNING HOME

Repeat steps 1-18 for going to a specified destination and then returning home from that location.

1. Approaching MTD bus.	_____	Looks at front sign of approaching bus and labels correct route name.
2. Approaching MTD bus.	_____	Looks at side sign and matches number and route name to card.
3. Approaching MTD bus.	_____	Waits for bus to come to a complete stop.
4. MTD bus at bus stop.	_____	Stands by front door, 1 — 1½ feet from curb.
5. MTD bus at bus stop.	_____	Waits for doors to open and allows people to step off bus.
6. MTD bus at bus stop.	_____	Walks up steps and pays fare.
7. MTD bus at bus stop.	_____	Verifies destination by asking driver.
8. MTD bus at bus stop.	_____	Asks driver for transfer, if necessary.
9. MTD bus at bus stop.	_____	Takes transfer and places it in pocket or holds it in hand.
10. MTD bus at bus stop.	_____	Walks back and sits in unoccupied seat, if available.
11. MTD bus at bus stop.	_____	If no seat is available, stands facing front and holding handrail.
12. MTD bus en route.	_____	Looks out window, scanning landmarks.
13. MTD bus en route.	_____	Pulls once or twice on signal cord at appropriate moment.
14. MTD bus en route.	_____	Stands by rear door, 1 — 2 feet away.
15. MTD bus en route.	_____	Waits for bus to stop.
16. MTD bus at stop.	_____	Briefly looks out window verifying correct stop.
17. MTD bus at stop.	_____	Waits for light to be activated and pushes door open.
18. MTD bus at stop.	_____	Steps off bus and away from curb toward sidewalk.

Training. The sequence of steps followed to teach bus-riding skills is presented in the task analysis in Table 2. It is divided into four phases: pre-riding skills, using route cards or modified map and schedule, riding the bus, and returning home. Prerequisite behaviors are listed to indicate those skills needed for, but not taught by, this program. Trainees not possessing these skills would require additional training prior to implementing this bus-riding program.

TABLE 2: Sequence of steps followed in training bus-riding skills.

Table 2: Task Analysis

Prerequisite Behaviors: Socially acceptable public behavior, and receptive and expressive language skills, lack of sensory impairment, mobile, matching skills, pedestrian skills, coin discrimination.

PHASE 1 — TEACHING PRE-RIDING SKILLS

Part 1: Recognizing MTD Bus Stop

Objective: When presented with several common traffic signs, trainee will indicate an MTD bus stop sign.

1. When presented with several common signs, of various size and shape (e.g., stop, railroad), T will indicate the sign which corresponds to the size and shape of an MTD bus stop sign.
2. When presented with several common signs (the same general size and shape as an MTD bus stop sign) printed with various logos, figures, and words T will indicate the MTD bus stop sign.

Part 2: Selecting Correct Fare

Objective: Given a random amount of change and/or bus tokens, T will indicate correct fare for a bus ride.

1. Given the trainer cue, "How much does it cost to ride the bus?" T will answer "25¢" or "one token."
2. Given a dollar bill, half dollar, quarter, dime, nickel, and penny and the trainer cue "How much does it cost to ride the bus?" T will indicate the quarter.
3. Given a dollar bill, half dollar, MTD token, dime, nickel, and penny and the trainer cue "How much does it cost to ride the bus?" T will indicate the MTD token.
4. Given a random amount of change including quarters and MTD tokens and the trainer cue "How much does it

TABLE 2: Sequence of steps followed in training bus-riding skills. — (Continued)

cost to ride the bus?" T will indicate all possible correct fares (token, quarter, combination of coins totaling 25¢).

Part 3: Discriminating Functional Bus Parts

Objective: T will point to the following bus parts as they are labeled by the trainer: front door, front steps, fare box, seats, handrail, signal cord, rear steps, signal light, and rear door.

Part 4: Identifying Route Names

Objective: While waiting at an MTD bus stop, T will correctly label the route name of an approaching MTD bus.

1. When presented with several printed stimuli having dissimilar configurations and the trainer cue "Which sign says (route name)?" T will indicate the sign named.
2. When presented with several stimuli printed with the route names and the trainer cue "Which sign says (route name)?" T will indicate the sign named.
3. When presented with a stimulus printed with the name LAVENDER, YELLOW, GREEN, BLUE, RED, ORANGE, or GREY, T will correctly label the MTD route name.

Part 5: Identifying Numerals

Objective: Given an MTD route card with clock faces and numerals corresponding to the MTD route names, T will correctly label the appropriate numerals.

When presented with any numeral 0-12 T will correctly label the numeral.

Part 6: Identifying Colors

Objective: Given an MTD route card and a modified route map, T will correctly label the colors of the MTD bus routes.

(The following step to be repeated for the colors lavender, yellow, green, blue, red, orange, and grey.)

When presented with a color stimulus, T will correctly label the color.

Part 7: Recognizing Landmarks

Objective: While riding an MTD bus, T will look out the window scanning landmarks and pull the signal cord when s/he recognizes the landmark preceding the desired destination.

1. When presented with a photographic slide of a landmark, T will correctly identify the landmark.
2. Given a role-playing situation of riding the bus, using a series of photographic slides, T will correctly identify the landmark preceding a predetermined destination.

PHASE IIA — USING THE ROUTE CARD

Part 1: Determining Destination

Objective: Given a box containing several MTD route cards, T will select the card corresponding to the desired destination.

1. Given the trainer cue "Where do you need to go today?" T will respond with an appropriate choice; e.g., work, shopping, Carle Clinic, etc.
2. When presented with a box containing several route cards and the trainer cue "Find the route card for (destination)," T will select the route card with the picture of the destination.

Part 2: Using the Route Card to go to Bus Stop

Objective: Given an MTD route card (see Figure 2), T will use it to arrive at the bus stop at the appropriate time.

1. Given an MTD route card with the word "transfer" and a picture of an actual transfer (see Figure 1), and the transfer cue "Do you have to transfer to get to (destination)?" T will answer "Yes."
2. Given an MTD route card without the word "transfer" or picture of a transfer (see Figure 2), and the trainer cue "Do you have to transfer to get to (destination)?" T will answer "No."
3. Given any MTD route card and the trainer cue "What bus(es) do you take to (destination)," T will label the correct lines.
4. When instructed to point to the first clock and asked "What do you have to do at (*time on first clock*) o'clock?" T will answer, "Leave home."
5. Given an MTD route card and the trainer cue "Look at your watch":
   (a) "is it the same or not the same as the 'Leave home' clock?" T will answer correctly.
   (b) Given an MTD route card with a non-matching time and the trainer cue "The clocks are not the same; is it time to leave home?" T will answer "No" and set a timer for 5 minutes.
   (c) Repeat Steps 5a and 5b until the times are the same.
   (d) Given an MTD route card with matching times, and the trainer cue "The faces are the same; what do you need to do?" T will answer "Leave home."
6. When T has indicated it is time to leave home, T will walk or ride to the nearest MTD bus stop.

PHASE IIB — USING MODIFIED MAP AND SCHEDULE

Part 1: Choosing Destination

Objective: T will determine whether the destination involves work, shopping, eating out, use of leisure time, or a doctor's appointment.

1. If destination involves shopping or use of leisure time, T will determine the specific location.
2. T will use a modified map and schedule to determine which bus lines to take and the time of the next bus.

Part 2: Decoding Map

Objective: T will use a modified map to determine which line(s) to take to a chosen destination.

1. Given a modified MTD map (see Figure 3), T will locate the symbol for chosen destination.
2. Given a modified MTD map (see Figure 3), T will label the color of the bus line that passes that destination.
3. Given a modified MTD map (see Figure 3), T will locate the symbol for the home bus stop.
4. Given a modified MTD map (see Figure 3), T will label the color of the bus lines that stop at the bus stop closest to his/her home.
5. If 2 lines labeled by T are the same, T determines the time of the next bus using the modified schedule.
6. If the 2 lines labeled by T are different, T traces the lines to the point where they intersect.
7. When T has pointed to the transfer point, T will label the interchange (e.g., Bank of Illinois).
8. T determines the times of buses from the home stop using a modified schedule.

Part 3: Using the Modified Schedule

Objective: T will use the modified schedule to determine what time to meet buses at the home bus stop, at the transfer interchange, and at the bus stop to return home.

1. Given a modified MTD schedule, T will point to the schedule for the bus line that stops closest to his/her home (1st line).
2. Given the modified schedule for the 1st bus line, T will find the words "home bus stop" and, in the column below, find the time of the next or most convenient bus.
3. When T has found the time for the 1st bus, s/he will read the adjacent figure in the column to the left for the time when s/he must leave home.

Part 4: Traveling to Bus Stop

Objective: When T notes on his watch/clock that it is time to leave home as indicated on the modified schedule, T will leave home and walk/ride to the home bus stop.

TABLE 2: Sequence of steps followed in training bus-riding skills. — (Continued)

PHASES III & IV — RIDING THE BUS AND RETURNING HOME

Part 1: Boarding Bus

Objective: Given that T has located the bus stop and verified that the bus is the correct one, s/he will board the bus in a safe and socially appropriate manner.

1. T waits for bus to come to complete stop.
2. T stands about 1 — 1½ feet from the curb.
3. T waits for the front doors to open and allows passengers to step off bus.
4. T walks up steps and stops next to the fare box.

Part 2: Verification of Destination

Objective: Given that T has boarded the bus, s/he will verify that it stops at the desired destination.

1. T asks driver "Does this bus stop at/go to (destination)?"
2. (a) If driver responds "No" (or equivalent response), T asks "How do I get there?" or "What bus do I take?" and proceeds to Step 3.
   (b) If driver responds "Yes," T says "Thank you" and proceeds to Part 3.
3. T gets off bus and follows driver's instructions, if possible (e.g., waits for different bus). If T is uncertain what to do, s/he gets off bus, locates a phone, calls home/community advocate, and explains the problem.

Part 3: Paying Fare

Objective: Given that T has verified the destination, s/he will pay the correct fare (or the equivalent, i.e., token or pass) and obtain a transfer, if necessary.

1. T places exactly 25¢ in coins or one token into fare box.
2. T asks driver for transfer, if necessary.
3. T takes transfer from driver and places in pocket or holds in hand.

Part 4: Finding Seat (or standing)

Objective: Given that T has paid the correct fare and obtained a transfer, s/he will locate a seat, if available.

1. T walks toward rear of bus and sits down in an unoccupied seat, if available.
2. If no seat is available, T stands, facing towards front of bus and holds onto pole.
3. T does not engage in any socially deviant behaviors while riding bus.

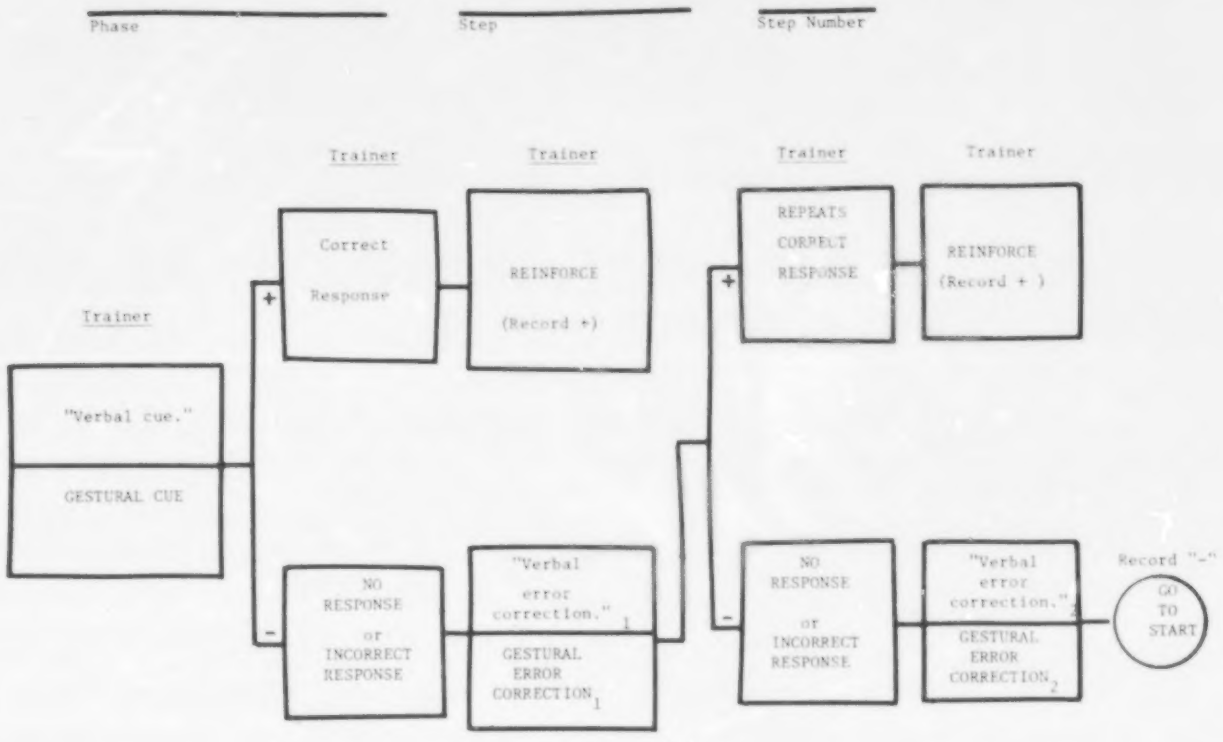
Part 5: Sighting Destination and Disembarking

Objective: T will sight the desired destination and/or key landmark(s), signal the driver to stop, and disembark at the correct time and place in a safe and appropriate manner.

1. T looks out window, scanning landmarks.
2. At the appropriate moment (when T sees trained landmark), T signals driver s/he desires to exit by pulling once or twice on the signal cord.
3. T stands by rear door, about one to two feet away.
4. T waits for bus to come to complete stop.
5. T briefly looks out window and verifies correct stop.
6. T waits for exit light to be activated and pushes door open.
7. T steps off bus and away from curb towards sidewalk.

The training procedures for all components of the program followed a framework of standardized instructional delivery. A prototype of the instructional presentation for a single training objective is presented in Figure 4. Similar training charts were constructed for each step in the task analysis. This was done to provide maximum training information to the agency staff so that with minimal inservice training they could continue the systematic skill instruction begun by this task force.

FIGURE 4. Standardized instructional delivery format used in training all components of the bus-riding program.



Each instructional delivery chart consists of cells within which the trainer's and trainee's behaviors are specified. The charts are used as follows:

1. Starting on the left side, the trainer performs the gestural and verbal behaviors identified.
2. Moving to the right, the trainee response is identified with correct responses in the upper cell and incorrect/no response in the lower cell.
3. The next column provides the consequence outlined for the trainee's response.
4. If trainee's response is correct, the trainer proceeds to the next trial; if incorrect s/he continues with the error correction procedure in the last two columns.

Throughout training, trainer's cues were faded as quickly as possible to foster independent performance of the tasks.

Trainee responses were recorded for each phase and step using /(+)/ for an unprompted correct response, a / + / for a prompted correct response, and a / — / for no response or an incorrect response.

Criterion for Movement Through the Program. The criterion for movement through the phases was two consecutive, correct (unprompted) responses for two consecutive training sessions. After three consecutive errors, trainers proceeded to the next step and returned to the uncompleted step at a later time in the session. Continued failure on any one step indicated the need for further modifications in the task analysis and training procedures.

Setting. Because training in natural settings enhances any training programs, instruction took place in the community while actually riding the bus. Training for most destinations took place when the trainee was most likely to use the bus system for transportation to that location. For example, training bus riding to dining establishments occurred at meal times. Training of prerequisite skills (such as numeral and color recognition) was carried out in the trainees' apartment. To ensure accuracy of data collection, the trainer accompanied the trainees on the bus, though only interacted with them during actual training trials.

Program Modifications. While the instructional delivery has been standardized through the task analysis and instructional delivery chart, there are some cases where the model may have to be modified. Modifications may include, for example:

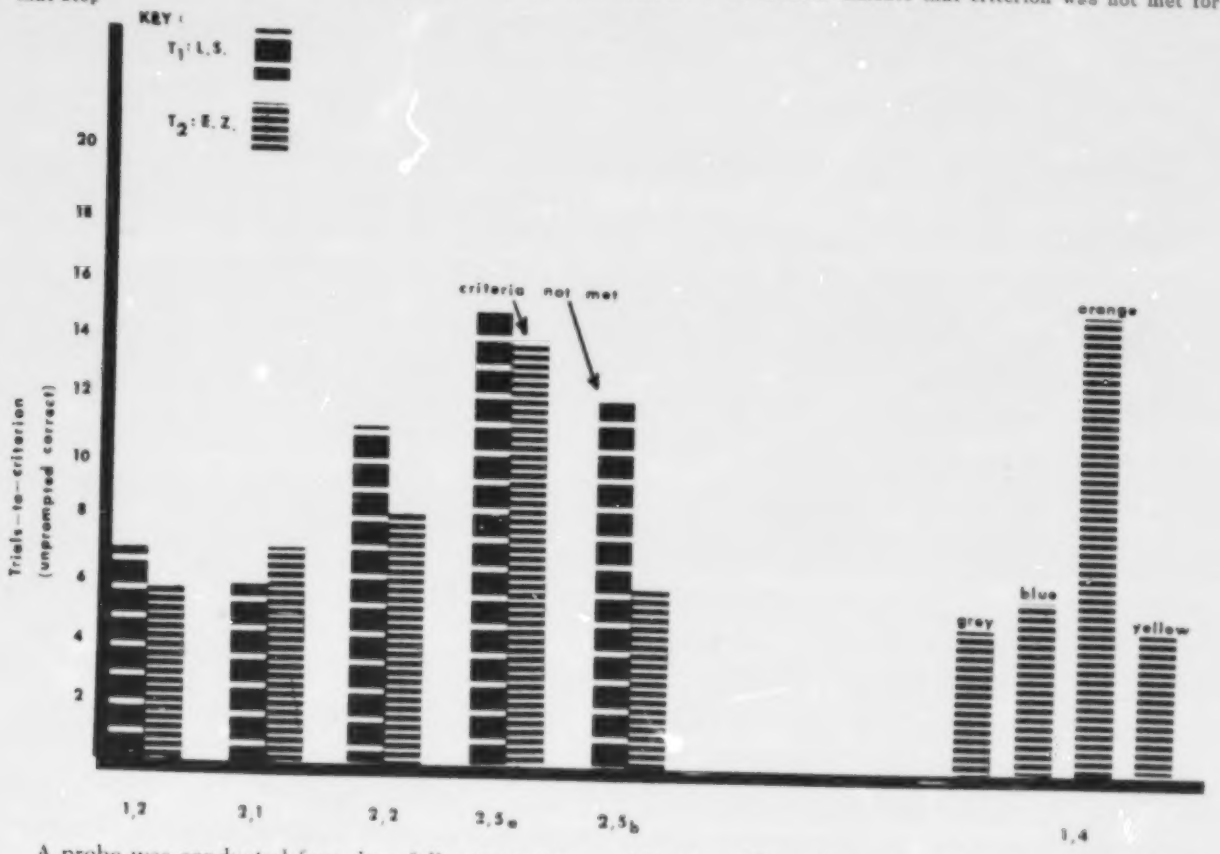
1. Signed trainer cues for the deaf or hard of hearing;
2. Alternative communication systems used by the trainee;
3. Printed cards for language impaired students to use to acquire information from bus drivers;
4. Training visually impaired students specific locations of bus stops;
5. Training visually impaired students to ask the bus driver for the name of the route;
6. Training visually impaired students to request the driver to stop at a specific destination;
7. Providing language master or braille route cards for visually impaired students;
8. Training tactual discrimination of coins and tokens;
9. Training the use of prosthetic devices such as wheelchair lifts;
10. Eliminating certain steps from the task analysis.

RESULTS AND DISCUSSION

Pretesting revealed that both trainees failed to reach criterion on steps 3 and 4 (a) and (b) in Phase II, Part 2. Both trainees passed Phase I, Part 3 and all of Phase III. It can be seen that the trainees generally missed those items dealing with the use of the route cards. Additionally, one of the trainees failed to correctly label the words "grey," "blue," "orange," and "yellow."

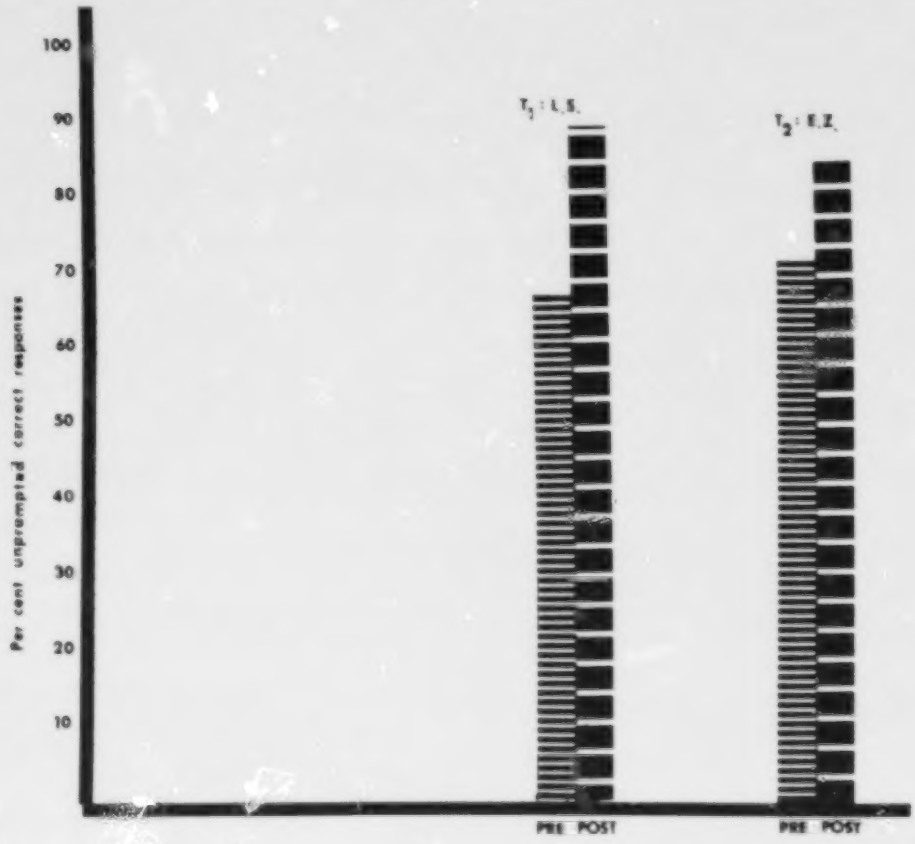
Therefore, instruction was begun on training steps for Phase I, Part 4 and for all of Phase IIA. Training was conducted over four 60-minute sessions, and data recorded by two independent observers for prompted correct, unprompted correct, and incorrect responses. Agreement between observers was computed for each session and ranged from 75% - 94%, with a mean of 88%. Criterion for each step was two consecutive unprompted correct responses for two consecutive sessions. Figure 5 shows the trials to criterion for unprompted correct responses on each training step for each trainee. It can be seen that criterion was reached on all training steps except Steps 5 (a) and 5 (b), which included the behaviors of comparing the clocks and setting the timer. It is felt that criterion could have been easily reached on those steps, but time constraints prevented the trainers from conducting another session.

FIGURE 5. Trials to criterion during training for each trainee. Broken lines indicate that criterion was not met for that step



A probe was conducted four days following training to assess the use of the route cards for traveling to previously untrained destinations. The probe procedure consisted of asking both trainees to take the bus to two different destinations designated by the trainers. No prompts were provided. Data were taken on the use of the route cards and the actual bus-riding behaviors. Figure 6 compares the pretest (assessment) and post-test (probe) data across all training steps. Both trainees correctly performed all the steps on the probe with the exception of the comparison of the route-card clock and trainer's watch (Phase IIA, Part 2, Step 5a) and the use of the timer (Phase IIA, Part 2, Step 5b).

FIGURE 6. Percent unprompted correct responses during pre- and post-test assessment by each trainee.



Data suggest that both trainees generalized in their bus-riding behavior from trained destinations to new, untrained destinations. The only items failed during the generalization probe were those on which criterion was never reached during training, which were part of a procedure to teach the trainees when to leave home to reach the bus stop on time. The procedure involved the trainee's (1) comparing his/her watch to the clock on the route card and (2) in the event that the times did not match, setting the timer to remind her to make the comparison again.

The trainer concluded that this procedure was unsatisfactory because the procedure was non-normal, inefficient, ineffective, and did not allow the trainee to problem solve for previously untrained times. Ideally, trainees should be chosen who have first mastered time-telling skills. However, when this is not possible, an alternative time management procedure would need to be developed.

The present task force successfully taught two moderately handicapped adults to utilize a general problem-solving approach for riding the mass transit system in Champaign-Urbana, Illinois. While the program is community specific, it serves as a model for the development of similar programs in other communities.

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Cortazzo, A., & Sansone, R. Travel training. *Teaching Exceptional Children*, 1969, *2*, 67-82.

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V. MATERIALS EVALUATION

Editors' Comments

As severely handicapped students are integrated into the public schools, the demand for effective teaching strategies for this population will become acute. Commercial publishers are presently attempting to meet the initial demand for teaching strategies through the production of instructional materials for severely handicapped students.

If teachers of severely handicapped students are going to be consumers of these materials, they must know what components are necessary for an effective instructional program and must be able to apply specific criteria in the evaluation of these materials. Knowledge of components and criteria will allow the educator to decide: (1) whether or not to purchase the material; (2) what adaptations and/or revisions may be necessary to use the material; and (3) what specific questions may be important to ask the commercial publisher.

When consumers of commercial instructional programs become efficient materials evaluators and begin to provide information to these publishers concerning specific components necessary for instructional materials, then commercial publishers will answer the demand. As long as teachers and other consumers are willing to purchase on the basis of appearance and without evaluation there is little reason for commercial publishers to alter their products.

A cooperative effort between the American Association for the Education of the Severely/Profoundly Handicapped and the University of Wisconsin Specialized Office 3 is presently conducting a nation-wide evaluation of instructional materials for use with severely handicapped students. Once this information is collected it will be placed in the National Instructional Materials Information System's computers for easy retrieval. The evaluation form used by this cooperative effort is an adaptation of the form presented here, and the rationale for it's development is evident throughout the paper.

For additional information on the evaluation of materials evaluation for severely handicapped learners, the reader is referred to:

Smith, D. D., Smith, J. O., & Edgar, E. B. Prototypic model for the development of instructional materials. In N. G. Haring & L. J. Brown (Eds.), *Teaching the severely handicapped*, Volume 1. New York: Grune & Stratton, 1976.

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Instructional Programming for the Severely Handicapped: Components and Criteria for Materials Evaluation

R. TIMM VOGELSBERG and BARBARA WILCOX
University of Illinois at Urbana

Traditional educational service for the severely handicapped student in this country included (a) placement in a large self-contained institution, (b) placement in a self-contained school, (c) maintenance at home, and (d) placement in private facilities such as churches or facilities supported by private associations concerned with providing services to retarded or developmentally disabled citizens (Brown, Nietupski, & Hamre-Nietupski, 1976).

As more severely handicapped students are integrated into the public school systems, the demand for effective teaching strategies for this population will become acute. Public Law 94-142 demands that handicapped students be educated within the public school system; for this to be done effectively, teachers will need to know specific instructional strategies for teaching the severely handicapped.

Education and training of the severely handicapped used to occur in institutions or private facilities and was typically delivered by parents, aides, orderlies, psychologists, and other personnel outside the field of education. As the education and training of these students becomes the responsibility of educators in the public schools, it is important that they not ignore the past experiences and accomplishments of the non-educators. Instead they must utilize past knowledge and incorporate it into new and better instructional programs for severely handicapped students.

The present paper addresses two major issues: a delineation of components of instructional programs for the severely handicapped; and a system for evaluating instructional programs available for use with the severely handicapped.

DEFINITIONS

The following definitions are offered.

Instructional Program

As the term is used here refers to basic factors, variables, and considerations that a teacher of severely handicapped students must systematize and implement in order to teach a particular skill (Williams, Brown, & Certo, Note 7).

Task Analysis

Task analysis is the division of skills into component parts, and the sequencing of those skills from easy to hard (Williams et al., Note 7).

Rate

Rate is the number of times a particular response occurs in a given time period.

Vehicles

Vehicles are tasks and task materials through which skills are taught.

Generalization

Generalization is the process of making the same response to a new example which differs in some way from previously met examples (Markle & Tieman, 1970).

Discrimination

Discrimination is making a different response for a non-example which shares some properties with a previous example (Markle & Tieman, 1970).

Evaluation

Evaluation is the collection and use of information to make decisions about an educational program (Chronbach, 1963).

Adaptation

Adaptation is change made in an educational program to improve the effectiveness of that program for a particular student.

Severely Handicapped

There has been constant controversy over the definition of the severely handicapped. Sontag, Burke, and York (1973) defined the severely handicapped as those

> . . . students who are not toilet trained, aggress toward others; do not attend to even the most pronounced social stimuli; self-mutilate; ruminate; self-stimulate; do not walk, speak, hear or see; manifest durable and intense temper tantrums; are not under even the most rudimentary forms of verbal control; do not imitate; manifest minimally controlled seizures; and/or have extremely brittle medical existences. . . . Severely handicapped students have not been able to acquire the general basic skills and information in any way, from anyone, or anything. Therefore, unless drastic environmental manipulations are engineered, severely handicapped students will not be able to acquire the needed basic skills and information (p. 5).

Justen and Brown (1976) surveyed state departments of education and found that relatively few states had adopted a generic definition of the term severely handicapped. Those states which did identify the severely handicapped employed definitions which emphasize severe or profound mental retardation or severe multiple handicaps (Justen, 1976). Over half the states surveyed had no definition of severely handicapped even though over 56% of the states which had

no definition claimed to have legislation mandating services to *all* exceptional children (Justen, 1976).

The Bureau of Education for the Handicapped (BEH) utilizes the following definition which is based on reasons severely handicapped students have been excluded from public schools:

> Severely handicapped children are those who, because of the intensity of their physical, mental, or emotional problems or a combination of such problems, need educational, social, psychological, and medical services beyond those which are traditionally offered by regular and special education programs, in order to maximize their full potential for useful and meaningful participation in society and for self-fulfillment (Thompson, 1974, p. 73.)

Abt Associates (1974) attempted to provide a more functional definition which dealt with specific behaviors. They attempted to list deviant behaviors which resulted in the label severely handicapped:

> Severely handicapped children and youth are those persons age 21 and under who are either mentally retarded, emotionally disturbed, deaf-blind, or multiply handicapped and who exhibit two or more of the following behaviors with a degree of regularity:
> — self-mutilation behaviors such as head banging . . .
> — ritualistic behaviors such as rocking, etc. . . .
> — self-stimulation behaviors such as masturbation, stroking, patting, etc., for a total of more than one hour a waking day.
> — failure to attend to even the most pronounced social stimuli, including failure to respond to invitations from peers or adults, or loss of contact with reality.
> — lack of self-care skills such as toilet training, self-feeding, self-dressing and grooming.
> — lack of verbal communication skills.
> — lack of physical mobility including confinement to bed (p. 4).

In 1976 Justen attempted to offer a definition that stressed educational needs:

> Educationally speaking the term severely handicapped refers to those individuals age 21 and younger who are functioning at a general developmental level of half or less than the level which would be expected on the basis of chronological age and who manifest learning and/or behavior problems of such a magnitude and significance that they require extensive structure in learning situations if their education needs are to be well served (p. 5).

All of the definitions agree on one point: the severely handicapped require extensive and specialized training. Those definitions that do not directly state the need, imply it with a long list of deviant behaviors that cause exclusion from different settings. For the purposes of this paper the definition of severely handicapped will be: those individuals who require extensive and specialized training (Brown, 1974; Gold, 1976). This definition implies that the severely handicapped *can* be taught and that it is the educators' responsibility to develop the technology to teach them.

Teachers' Role in Materials Evaluation and Development

As Public Law 94-142 is implemented and severely handicapped students are integrated into the public school system, a variety of new instructional competencies are going to be required of special education teachers. The teachers' competencies must be directly related to the instructional problems and acquisition deficits presented by the students (Sontag et al., 1973, p. 5). If the students are not toilet trained, but are capable of becoming so, teachers must have within their instructional capabilities a procedure to toilet train even the most difficult student. Teachers must also be able to adapt procedures to fit existing physical difficulties.

The behaviors listed in the definitions of severely handicapped must be behaviors that teachers can either teach or eliminate. Teachers of the severely handicapped must have the capacity to cover many disciplines, and to work cooperatively with physical, occupational, language, and medical therapists. They must also be capable of working with persons qualified to provide visual and auditory assessment and habilitation as well as the general resources of the educational community (Brown et al., 1976).

The point is that teachers cannot expect to receive constant support, aid, or instruction from ancillary personnel. There are not enough speech therapists, physical therapists, psychologists, pediatricians, or other professional personnel to be in the classroom, or to assist teachers in developing instructional programs to fit a severely handicapped student's needs. Even if there were enough ancillary personnel, it is doubtful that the financial resources would be available to include them in the development of instructional programs for each student. It is also doubtful that they would have been trained to work with the severely handicapped.

The primary task of educational technology is becoming the development of a technology to train others to teach (Lent, 1970). Blot (1975) points out that teachers are less and less dispensers of narrow areas of knowledge, and more and more managers of materials and systems created by technicians and specialists. This is an especially relevant observation when considering the many disciplines with which the teachers of the severely handicapped must deal. Connor (Note 3) stated that interdisciplinary teamwork no longer appeared adequate to assure high level programing for the severely and multiply handicapped. Teachers will do well to learn with and from their colleagues to:

> (1) actually perform tasks deemed as the traditional province of other professional workers,
> (2) actually release some of their traditional roles to others (including parents) without losing

the responsibility for accountability of what is done and how.

(3) each professional worker retains his professional identity and its obligations to continue study in his or her own field (p. 203).

It seems evident that teachers of the severely handicapped must have many different and multidisciplinary competencies to teach effectively, and will require quality instructional programs developed by both teachers and publishers. Attention has to be directed where it has belonged since education began: on the individual learning problems of the student. There is no room for professional differences or multidisciplinary disagreements if effective instructional programs are to be provided to the severely handicapped student.

There is a dearth of commercial instructional programs for the severely handicapped on the market. Lance (1976) feels that due to the low market value and the relative prevalence of severely handicapped children compared to all children within the educational system, instructional programs for the severely handicapped will be both high cost and limited in availability. There is, however, considerable disagreement with this point of view:

> It is expected that in the near future, because of the appearance of large numbers of severely handicapped students in public schools, a concerted effort on the part of commercial publishers and others will be made to develop much needed instructional materials (Williams et al., 1975, p. 13).

Teachers in special education have essentially two alternatives in the provision of instructional programs. They can prepare their own programs or work with existing programs to modify them.

The selection or modification of instructional programs must be viewed as a joint process governed by the instructional objectives and resources of the teachers (Hofmeister, 1969). Availability of programs and financial costs are realistic limitations to adaptation of existing commercial programs. Presently it appears that effective teachers of severely handicapped students must develop programs or make major modifications of existing programs.

Teachers of the severely handicapped and the special education teachers who suddenly realize that severely handicapped children are going to be integrated into previously segregated classrooms are going to discover: (a) that there are few, if any, commercial programs for the severely handicapped, (b) programs that are available are of questionable value, and (c) that they will need the actual skill to develop, implement, and adapt instructional programs for their students. In other words, the teachers must be aware of the components necessary for an effective, functional instructional program for the severely handicapped, and must have the techniques to implement the program *or* to instruct others in its implementation.

Components of Instructional Programs

As educators attempt to develop instructional programs for the severely handicapped, it becomes apparent that the more pronounced the level of disability, the more specific and precise are the competencies required of the teachers (Sontag et al., 1973).

Haring and Cohen (Note 4) feel that severely handicapped students must be taught relevant skills, and that there is an urgent need for uniform guidelines for arranging instructional experiences presented to severely handicapped students. Haring, Hayden, and Beck (1976) stressed the need for sequencing skill development, building a rationale for this sequencing, and offer the following rules for planning an instructional program: (a) measure the entering behavior; (b) specify the terminal behavior; (c) require an active response; (d) arrange small sequential steps; (e) build in periodic review; (f) withdraw discriminative stimulus systematically by shaping generalization and differential discrimination skills; and (g) measure progress. These criteria can be applied in the development, adaptation, and evaluation of instructional programs.

Severely handicapped students are often different from many normal and mildly handicapped students on a variety of relevant instructional dimensions: generalization; retention; imitation; articulation; acquisition; and vision skills (Brown et al., 1976). These instructional dimensions require more intense and specific precision teaching than usual. These differences must be reflected in the instructional programs and the evaluation criteria for instructional programs for the severely handicapped.

The basic components of an instructional program proposed by Williams et al. (Note 7) will be elaborated as a basis of necessary instructional components for the severely handicapped. These authors suggest the following questions must be addressed in instructional programs for the severely handicapped:

1. *What* skill does a teacher intend for the student to perform?
2. *Why* does a teacher want the student to perform a specific skill?
3. *How* does a teacher intend to teach the student to perform the skill?
4. How can a teacher empirically *verify* (measure) that the skill of concern is being or has been taught?
5. Can the student perform the skill at a situationally acceptable *rate*?
6. What does a teacher intend to use as *vehicles* (instructional materials) for the skill to be acquired and performed?
7. Can the student perform (*generalize*) the skill across persons, places, instructional materials, and language cues?
8. Can the student perform the skill without directions to do so from persons in authority (*self-regulation*)?

What Skill Does a Teacher Intend for the Student to Perform

To develop efficient skill sequences it is essential that the teacher have in his/her repertoire the skills of task analysis (Williams, 1975; Brown, 1976). A program may have tasks appropriately sequenced but take steps that are too large for a severely handicapped child; a teacher using task analysis could adapt the instructional sequence by breaking each step down into smaller, easier, and more precise components. A task analysis is not considered a statement of *how* to teach, but a precise delineation of *what* to teach.

Determining what to teach and how such skills might be task analyzed can be abstracted from a number of sources: child development literature; cognitive development literature; special education literature; commercially available curriculum packages; and logical post-school performance demands (Williams, 1975).

The task analysis approach can not be overemphasized; it is the single most important tool special educators must have to break instructional sequences down to teachable components. Using task analysis, teachers can sequence skills appropriately for each child, make adaptations in existing programs, apply the approach to his/her entire classroom, and become a more effective teacher. The information can be used to continually improve instructional programs so the same errors are not repeated.

Why Does a Teacher Want the Student to Perform a Specific Skill

There is no longer any justification for teaching the severely handicapped skills that will enable them to function appropriately within a residential institution, or to maintain the development of environments that unduly restrict, shelter, or retard (Williams et al., Note 7). Specific skills should be directed towards independent functioning and be a part of a cumulative segment of a curriculum sequence. The important concept here is that of function: the skill being taught must be of some functional value to the severely retarded individual. Decisions must be made to add a functional skill to the student's repertoire, not to make the classroom or teaching task more convenient for the teacher.

How Does a Teacher Intend to Teach the Student to Perform a Skill?

Once the teacher has defined what to teach, and justified why that skill would be of value for the student to learn, he/she is ready to deal with the technology of how to teach that skill. The task analysis has given the specific skill sequence, presentation order, terminal objective, and prerequisite skills. The next logical step is to determine how to impart that knowledge to the student.

The question of how to teach the severely handicapped is often confounded by varying degrees of visual, auditory, motor, and attending impairments. Each teacher has to take these individual impairments into consideration. Gold (1976) addressed how to teach the instructional program as a question of instructional format. There are essentially two major types of format: formats for single pieces of learning (e.g. learning specific color names); and formats for multiple pieces of learning (e.g. performing a complex assembly task). A brief listing of formats will be offered with the interested reader being referred to programed instruction texts and Gold (1976) for further information.

Formats for single pieces of learning are simple discrimination training, paired associates learning, match-to-sample, and oddity tasks. The formats for multiple pieces of learning include forward and backward chaining, total task presentation, free operant format, organized exposure with feedback (errorless fading) and combinations of the above.

Before a teacher makes a decision of how to teach and what format to employ, he/she must make a "best guess" as to which will probably be the most effective format, how much the learner is capable of learning from errors, and the relation of the task to the characteristics of the learner (Gold, 1976). Most importantly, the teacher of the severely handicapped must realize that the more artificial the teaching situation, the more difficulty the student will have using the information in a variety of situations.

How Can a Teacher Empirically Verify That the Skill of Concern is Being, or Has Been Taught

Direct measurement (empirical verification) of the specific skill being taught is a vital aspect of the instructional program. Measurement will provide the teacher with important information about the program. It will determine if the student is making progress towards the terminal objective, whether the task analysis was sufficiently detailed, and when the student has reached the terminal objective and is ready to begin on the next skill in the curriculum sequence. Measurement, like the other components, has to be adapted to the individual physical and psychological characteristics of the student.

Initially, student progress may be so small that intricate measurement is necessary for evidence of effectiveness, and decision making about the instructional program.

Can the Student Perform the Skill at a Situationally Acceptable Rate

If the severely handicapped are going to become functional members of society, they should be taught to perform tasks at a normal rate. As an illustration of the importance of rate, consider the student who could purchase groceries and determine the exact amount of the purchase. The student did determine the correct amount, but it took him almost five minutes; he had learned to count exact amounts of money, but had not been taught to do so at a situationally acceptable rate.

What Does the Teacher Intend to Use as Vehicles for the Skill to be Acquired and Performed

Any complete instructional program must include information on the type of materials used. Since it is extremely important that skills learned in contrived settings be performed in more practical environments, the materials should be chosen carefully for their functional use across different environments.

> . . . when a teacher is considering what to use as vehicles for skills to be acquired and performed by severely handicapped students, tasks and task materials should be chosen on at least the basis of their: (a) functional use to the individual student; (b) ease of discrimination, (c) accessibility to repeated practice; (f) accessibility or frequency of occurrence across settings the individual inhabits; and (g) facilitation of later skill development. As it is unlikely that many tasks will fulfill all the criteria delineated, it is often necessary to teach a skill through many different tasks and materials (Williams et al., Note 7).

Again, it is important to remember that the more artificial the task, the more artificial the vehicle, the more difficulty the severely handicapped will have transferring the acquired skill to a functional situation.

There are commercially published materials on the market today, intended for use with the severely handicapped, that suggest the use of cardboard materials and irrelevant actions within the instructional program. Adherring to the above statements, any programing for eating or drinking should include real liquids and real foods. If a functional skill, such as eating, is going to be taught, it follows that functional materials should be used. Artificial instructional materials only add confusion and necessitate a further step in the program to remove their effects.

Can the Student Perform the Skill Across Persons, Places, Instructional Materials and Language Cues

An important but often neglected aspect of instructional programs is the provision that skills developed during instruction are actually demonstrated in other settings. Brown et al. (1976) stated ". . . teachers of severely handicapped students can rarely, if ever, infer that because a student performs a particular skill in an artificial setting he or she can also perform that skill in other more natural settings (p. 3)." This is referred to as "zero degree inference strategy." No inferences should be made across settings; it might be necessary to teach the skill repeatedly in a number of different settings to assure that it is learned and generalized. One strategy offered is consistent inconsistency or systematic variation.

Barrett and McCormack (1973), working with severely handicapped institutionalized individuals, demonstrated improved generalization, faster skill acquisition, and lower prevalence of disrupting behaviors, by varying the tutors. An educational supervisor directed tutors to work with different programs and different individuals daily. Some other anecdotal aspects of the varied teacher tutorials included: pupils could learn from many varied tutors; tutors have observable, valuable input; lower attrition among volunteers; more time was allowed for staff to program as teachers became managers of instruction; and communication between volunteers and professional staff was increased.

Each time a student is taught a functional skill or game, s/he might be required to perform that skill. ". . . (a) in reaction to, or in the presence of, at least three persons, (b) in at least three natural settings, (c) in response to at least three different sets of instructional materials, and (d) to at least three different, appropriate language cues (Brown et al., 1976)." The teacher must take care to assure that the student can perform the task in any situation where it is important that the skill be demonstrated.

Rincover and Koegel (1975) demonstrated the importance of structuring generalization into the instructional program by training a new behavior to ten autistic children in one setting and recording their responding in another environment. Four of the children showed no generalization, and six of them generalized with no intervention. The problem was identified as stimulus control; specific changes in the stimulus settings resulted in generalization.

In a later study, Koegel and Rincover (1976) stated that a successful treatment program must measure initial acquisition of a behavior change, generalization of that change to other settings, and maintenance of the behavioral change over time. They were concerned with teaching the task, teaching the generalization of that task, and observing the maintenance of the task. They concluded that the thinner the reinforcement schedule during treatment (training), the more durable the extra-therapy responding would be. Matching reinforcement schedules in treatment to the level of reinforcement in the natural environment appeared to be a good initial method to program for maintenance. There is little functional in an instructional program that teaches specific skills but fails to attend to generalization and maintenance training.

There are a number of ways to effectively program for generalization and little experimental data to indicate the most effective. Three alternatives would include: (a) take all the irrelevant aspects of the training situation and vary them constantly, (b) utilize stimuli in the natural environment as discriminative stimuli, and (c) train in an artificial setting and gradually fade into the terminal (natural) setting. The closer the training situation is to the criterion setting, the greater are the chances that stimulus generalization will occur (Pomerantz, 1976). This statement supports training within the criterion environment as much as possible. The difficulty with such a direct approach is that the closer to the criterion environment, the less control the trainer has, and, consequently, the harder it is to teach. There is controversy over the most effective teaching method. Williams et al. (Note 7) felt that it was best to train in a

situation as close as possible to the criterion environment, removing the child to more and more structure only as necessary. Artificial environments, unfortunately, may be necessary until teachers develop approximations to appropriate techniques.

It is common for educators to evaluate a program by the amount of time it takes from the beginning of the program until the average student has mastered the target skill. This is not an appropriate evaluation technique for the severely handicapped student's program if the student is not able to perform the task in a normal situation. A contrived situation would allow the student to reach criterion in the least amount of time but would also reduce the opportunity for discrimination, generalization, and maintenance.

Can a Student Perform a Skill Without Directions to do so from Persons in Authority

A final point to consider in examining programs for severely handicapped students is whether there is some attention given to self-regulation of the skill in question. That is, once a student has learned a task, the trainer should verify that the skill can be performed in response to the natural demands from the environment and not simply in response to cues from the trainer. Instructional programs that terminate with the objective, "When given the instruction, , the student will ," are not adequate. The student must be able to perform the skill independently.

These components as they have been identified, are being incorporated into teacher education programs for the severely handicapped. As instructional programs are developed for this population, educators need to insure that new programs emphasize functional skills, are not watered down versions of programs for other populations, and include the basic components of instructional programs as identified here.

Evaluation of Instructional Programs for the Severely Handicapped

In a recent National Association for Retarded Citizens (NARC) publication, Haring and Cohen (Note 4) made an admirable plea for some sort of organizational framework before commercial instructional programs for the severely handicapped begin to flood the market:

> As debate increases about what to teach severely handicapped pupils, and as demand increases for materials for use in teaching this population, teachers and administrators will become involved in many small, separate, local community efforts throughout the states for the purpose of developing curricula. If tradition is followed, there will be a large number of curricula developed. All will be different to some extent, based on differing sets of assumptions, and a variety of tasks and sequences (p. 43).

If the tradition of independent local curriculum development is followed, and a variety of materials are suddenly available which vary greatly in quality, then it is clear that teachers and other purchasers of commercial instructional programs must have some competencies in the evaluation of instructional educational materials. The recent formation of a committee for the evaluation of instructional materials (Gilkey, 1976) points to the necessity for some guidelines to evaluation. It follows that the more precise the teaching technology required, as for the severely handicapped student, the more precise any evaluation instrument must be.

Amendment 633 to Public Law 94-142 makes direct reference to instructional materials for the handicapped. BEH support of the National Center for Educational Media and Materials for the Handicapped, and support of research projects that develop instructional programs for the severely handicapped (Wilson, Note 8) are definite indicators that commercially produced instructional programs for severely handicapped students are on the way.

Komoski (Note 6) surveyed 14,000 elementary and secondary school teachers and asked what they would do if they could not use the commercial instructional programs they were currently using. The majority responded that they would simply use other commercially available alternatives, very few teachers indicated that they would make or structure their own instructional programs if they lost the ones they had. The teachers had two main feelings about instructional programs: all instructional programs are equally usable; *or* all instructional programs are pretty poor.

The majority of these teachers class time, 90 to 95%, involved the use of commercial instructional programs of some sort. Further inspection revealed that these teachers had an average of three hours to decide which programs to purchase (if they were consulted at all), and that few of them had received any formal instruction in program evaluation. Komoski felt that this was like saying to a doctor:

> Although you are going to spend 90 - 95% of your time using things that are designed to help you bring about beneficial internal changes in your patients you will be given little time or opportunity to select what you are going to use. Nor will you be trained to use it effectively (p. 4).

Given this situation, it is easy to understand the educators view that instructional programs are simply products of a competitive commercial industry. The overall attitude was ". . . it doesn't make too much difference which program gets used because it can be taken for granted that they are all used to doing pretty much the same thing, and one product does it about as well as another (p. 6)." In a survey of 73 teacher education programs, Komoski (1976) located only three programs that had any formal evaluation training and all of these were graduate programs.

Parents, volunteers, and paraprofessionals are becoming more involved in the educational process, both at home and at school. It is the educators *responsibility* to insure that their initial attempts to teach

should be as successful as possible. If the teaching situation is in the classroom, the teacher *may* be able to monitor the person teaching closely enough to insure a relatively positive experience. If the teacher is involved in helping a parent to teach their child at home, or in a situation where the teacher can not be present, the teacher should insure that the parent has as good an instructional program as possible. In the absence of professional intervention (teacher presence), the most effective method for the paraprofessional to use for teaching is the utilization of effective, validated instructional programs. To supply the paraprofessional with an indication of which instructional programs are the best to purchase, the teacher must have the ability to evaluate available programs.

When evaluating instructional programs some basic assumptions have been shown repeatedly: (a) no matter how poor the program is, there are some teachers who will be able to demonstrate effective results on their teaching ability alone; and (b) no matter how good an instructional program is there are some teachers who will not use it appropriately and will have no success with it.

Many educators have listed criteria for instructional programs (Bleil, 1975; Klein, Note 5), and one publisher (Bleil, 1975) even makes some rather critical remarks about publishers: "Publishers are masters of marketing; they know how to slick a poor product up so we'll buy it. . . . Materials are marketed for teacher appeal, not student performance (p. 21)." Some of the claims that he warns teachers and consumers to avoid are: (a) fad words or jargon filled with the educational buzz word of the day; (b) diagnostic labels which may be only labels put on materials for marketing purposes; and (c) magic solutions such as, teach your child in three easy lessons.

There are varied approaches to acceptance or rejection of commercial instructional programs. Some teachers refuse to use them (a small percentage) and other teachers use them and make the necessary adaptations. Very few teachers communicate directly with their school systems, with commercial publishers, or with national agencies to evaluate, criticize, or praise the materials they are using.

Latham (1974) developed a checklist for instructional program evaluation after reviewing 30 available checklists. He felt that no existing checklist measured the educational value of programs; instead they appeared to assess teacher perceptions of the value or worth of the program. Few checklists actually considered pupil progress through the program.

Thiagarajan (1974) offered exact evaluation lists that were complete, but too lengthy for the usual teacher. Vogelsberg (1974) and Bleil (1975) offered further examples of evaluation criteria for effective instructional programs. All of the criteria ask the respondent to indicate if a component is present or not, and ask similar questions.

Included in some of the checklists are sections on user considerations and skills necessary to use the instructional program being evaluated. As indicated earlier, a sophisticated user, such as an experienced teacher, could easily utilize instructional programs of inferior quality. Those same programs would probably lose all effectiveness if employed by an inexperienced paraprofessional.

An evaluation form (Table 1) has been developed by the authors to assist decision making in the development, revision, and possible adaptation of instructional programs for use with paraprofessionals. It is expected that an instructional program should meet the majority of the items listed, dependent, of course, upon the skill of the user. This form, in a slightly modified version, is being used in a nationwide survey of materials used with severely handicapped students.

Table 1

INSTRUCTIONAL MATERIALS EVALUATION FORM

☐ COMMERCIAL MATERIAL

Title: _____

Publisher: _____

Catalogue Page: _____ Cost: _____

☐ TEACHER MADE/TEACHER MODIFIED MATERIAL

Teacher: _____

School Program: _____ Address: _____

City: _____ State: _____

Source: _____ Cost: _____

INTENDED POPULATION

____ Non-Handicapped
____ Child
____ Moderate
____ Severe

AGE LEVEL

____ 0 - 2 ____ 9 - 12
____ 3 - 6 ____ 12 - 15
____ 6 - 9 ____ Adult

USER AUDIENCE

____ Teacher
____ Aide/Paraprofessional
____ Parent
____ Other _____

COMPONENTS OF INSTRUCTIONAL PROGRAMS

The Instructional Program ...	YES	NO	UNSURE	N/A	COMMENT
1. Presents adequate statement of terminal objective					
2. Identifies instructional objectives for each lesson					
3. States rationale for objectives					
** 4. Trains functional skills					
** 5. Trains age appropriate skills					
** 6. Is part of a longitudinal curriculum sequence					
7. Identifies prerequisite skills					
8. Specifies procedures for assessment of learner prerequisites					
9. Specifies procedures for initial assessment of skills to be taught (pretest)					
10. Contains defined sequence for instructional objectives (task analysis format)					
11. Specifies consequences for student performance - error correction					
- reinforcement procedures					
12. Specifies data collection procedures to monitor progress					
13. Presents one task per lesson					
14. Reviews previously mastered objectives					
** 15. Provides for discrimination training					
** 16. Provides for maintenance of skills trained					
** 17. Contains provisions for generalization across people, places, materials and cues					
** 18. Programs for performance of skill at a situationally acceptable rate					
** 19. Provides for eventual student initiated performance of objectives					
** 20. Contains suggestions for program modification and adaptation					
* 21. Identifies procedures for measurement of terminal objectives (posttest)					

USER CONSIDERATIONS

	Yes	No
** 1. The instructional program has natural and functional training materials		
2. It contains a variety of training activities		
3. It specifies the amount of time required per training session		
4. It contains material that are available or inexpensively available		
5. It specifies the amount of user preparation time necessary		
6. It describes training procedures in a usable format (flow chart, etc.)		
7. It contains language and amount of detail appropriate for users who will actually deliver instruction		

ADDITIONAL USER QUESTIONS

	Yes	No
1. Has the program been field tested?		
2. Has the program been field tested with the user's population?		
3. Is the field test data available?		
4. Will in-service training be necessary to implement use?		
5. Are consultants available to deliver training?		

6. What aspects of the program are particularly useful? _____

One of the many questions that a publisher should be able to answer is, "How was the instructional program developed, and do you have data concerning the materials development? (Lent, 1975, p. 8)" Was the instructional program simply written and published, or was it subjected to some sort of developmental testing?

Developmental testing, formative evaluation, and learner verification and revision all refer to the process of subjecting the instructional program to a series of expert appraisals, field tests, and revisions until the instructional program is judged to be as effective as possible. When this point is reached, the instructional program should be put through a summative evaluation, which is a final evaluation with the intended population before the product is offered to commercial publication. If there is no validation data on an instructional program, it might be wise to search for other programs.

A good source of information about instructional programs that are commercially produced is Educational Products Information Exchange (EPIE), which will provide information on the physical properties of the product, the purposes for which it was developed, and the conditions under which it has been used, the actual results of its use, and judgments of users and observers (Stake, 1967).

Of the criteria identified in Table 1, the following are of special importance for materials for severely handicapped students:

(a) Does the instructional program train a functional skill?
(b) Does the instructional program train age appropriate skills?
(c) Is the instructional program part of a longitudinal curriculum sequence, *or* can it become part of one?
(d) Does the instructional program provide a discrimination training format (concept analysis approach)?
(e) Does the instructional program provide maintenance training of skills learned?
(f) Does the instructional program contain provisions for generalization across people, places, materials, and cues?
(g) Does the instructional program demand performance of the skill at a situationally acceptable rate?
(f) Does the instructional program provide for eventual student-initiated performance of objectives?
(g) Does the instructional program contain suggestions for modification and adaptation of the program for specific impairments?
(h) Does the instructional program identify procedures for measurement of the terminal objectives (post-test)?
(i) Are the instructional materials in the instructional program both natural and functional training materials?

The other components listed in Table 1 are, of course, also very important, but the components listed as evaluation criteria for instructional programs for severely handicapped students are components seldom seen in commercial instructional programs allegedly developed for use with this population.

The intent of this paper has been to indicate those components necessary for an effective instructional program for the severely handicapped; these components are effective evaluation criteria and indicators of necessary adaptation of instructional programs for severely handicapped students.

As teachers become aware of the necessary components, begin to evaluate instructional materials before purchase, and demand certain standards, *then* commercial publishers may begin to include the necessary components.

As long as educators and purchasers of commercial programs are willing to base their purchase on appearance rather than effective evaluation criteria and proven learner effectiveness, commercial publishers will be only too happy to continue to put pretty but ineffective instructional programs on the market.

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APPENDIX A

A Partial Listing of Commercial Curriculum Materials for the Severely Handicapped

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APPENDIX B

Sample Instructional Materials Evaluation Forms

INSTRUCTIONAL MATERIALS EVALUATION FORM

This evaluation form was designed "to assist decision making in the purchase or use of instructional materials. It would also be appropriate for development, revision, or adaptation of instructional materials. It is expected that a program should have the ma'ority of the components listed for effectiveness (dependent upon the skill level of the user).

The evaluation form is broken down into three sections:

Components of Instructional Programs: specific components are listed and those components with an asterisk (**) are considered especially important for programs intended for use with severely handicapped individuals.

User Considerations: specific items of concern to the user.

Additional User Questions: items the user should consider before using or purchasing instructional materials.

This form is recommended to provide guidelines only; many of the ratings will be of a subjective nature, but will give an overall impression of the program being evaluated.

RANK each item or component using the following scale:

YES — yes the component is present or satisfied in the program as presented

MI — component criteria could be met with minor modifications

MAJ — component criteria could be met with major modifications

NO — component is not present in the program and it would be difficult to make sufficient modification

For elaboration of the components listed, the reader is referred to:

Thiagarajan, S., Semmel, D. S., & Semmel, M. I. *Instructional development for training teachers of exceptional children: A sourcebook.* A joint publication of the Minneapolis Leadership Training Institute/Special Education, University of Minnesota; The Center for Innovation in Teaching the Handicapped (CITH), Indiana University; The Council for Exceptional Children (CEC); and the Teacher Education Division of the Council for Exceptional Children, 1974.

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VI. LEGAL AND ADMINISTRATIVE ISSUES

Editors' Comments

Due to recent federal legislation mandating free and appropriate education for all handicapped children (Weintraub, Abeson, Ballard, & LaVor, 1976), numerous administrative concerns have emerged and must be addressed by educational personnel ranging from the superintendent of schools to classroom teachers and paraprofessionals. These concerns are different from traditional educational problems and will require advanced knowledge, preparation, and decision-making (Sontag, Burke, & York, 1973). The articles included in this section delineate some of the concerns facing administrative personnel in meeting the federal mandate and provide specific strategies that will help insure appropriate placements and services for handicapped students.

Van Dyke presents a general review of P.L. 94-142 which will help to familiarize administrative and school personnel with the federal legislation. In the second paper, Orelove delineates specific administrative problems that arise from sections in the federal law dealing with child find and child identification, least restrictive placement, personnel selection, individualized educational plans, procedural safeguards, and professional rights and responsibilities. His emphasis throughout is on the application of the law to the provision of services to severely handicapped students.

Crowner's paper summarizes his five years of involvement as an administrator in a public school system which has served severely handicapped students. Dew, on the other hand, identifies pressing questions and issues facing an administrator just about to reintegrate severely handicapped students into the public school domain. In the final paper of the section, Fulk describes important ways in which administrators can support efforts toward quality educational programs for severely handicapped students.

For more extensive coverage of legal and administrative issues pertaining to programs for the severely handicapped, the reader is referred to:

Crowner, T. T. A public school program for severely and profoundly handicapped students: Zero exclusion. In L. Brown, T. Crowner, W. Williams, & R. York (Eds.), *Madison's alternative for zero exclusion: A book of readings*. Madison, WI: Madison Public Schools, 1975.

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Public Law 94-142
The Education for All Handicapped Children Act

ROBERT VAN DYKE
Illinois Office of Education

Public Law 94-142, The Education For All Handicapped Children Act is the most significant single educational legislation in the history of federal legislative activity. While the act itself is a complex piece of legislation, in development for over three years, the intent is simple. Public Law 94-142 intends:

> . . . to assure that all handicapped children have available to them, within the time periods specified in section 612(2)(B), a free appropriate public education which emphasizes special education and related services designed to meet their unique needs, to assure that the right of handicapped children and their parents or guardians are protected, to assist States and localities to provide for the education of all handicapped children, and to assess and assure the effectiveness of efforts to educate handicapped children.

Under the new role of P.L. 94-142, the federal government's role in education of the handicapped will switch from the offering of limited grants, technical assistance, and support to a role of expanded financial support and the establishment of the right to public education for handicapped children as a national goal. The legislation is a unique combination of federal funding and guarantee of constitutional rights, first established in section 504 of the National Rehabilitation Act. One must look beyond the financial aspect of the act to see its clear meaning. P.L. 94-142 ends the court action needed to secure the educational rights of handicapped children. In this fact, it goes far beyond any other piece of federal legislation in the educational field. It indicates congressional acceptance of the right to a free public education under the equal protection clause of the federal constitution.

To best understand the act, a complete overview is essential. To facilitate this overview, the Council for Exceptional Children for the Bureau of Education for the Handicapped, USOE, developed in conjunction with the Council for Exceptional Children a media package for informational purposes. Presented below, in question and answer format, is the general overview of P.L. 94-142. With this overview as a basis, we can then examine the specifics of the Rules and Regulations, which will govern 94-142 in more detail.

Does P.L. 94-142 replace the earlier Federal Education of the Handicapped Act?

No. P.L. 94-142 is a complete revision of Part B only of the Education of the Handicapped Act. Part B was formerly that portion of the Act addressing the basic State grant program. The other components of EHA (Parts A-G) remain substantially unchanged and continue in operation. Parenthetically, all programs under the aegis of the EHA, including the P.L. 94-142 revision of Part B, are administered through the Bureau of Education for the Handicapped (USOE-HEW).

How are handicapped children defined for purposes of P.L. 94-142?

Handicapped children are defined as: mentally retarded, hard of hearing, deaf, speech impaired, visually handicapped, seriously emotionally disturbed, orthopedically impaired, or other health impaired, or children with specific learning disabilities, who by reason thereof require special education and related services.

P.L. 94-142 is intended to help pay for special education and related services for handicapped children as defined above. How are special education and related services defined?

Special education: The term "special education" means specially designed instruction, at no cost to parents or guardians, to meet the unique needs of a handicapped child, including classroom instruction, instruction in physical education, home instruction, and instruction in hospitals and institutions. Related services: The term "related services" means transportation, and such developmental, corrective, and other supportive services (including speech pathology and audiology, psychological services, physical and occupational therapy, recreation, and medical and counseling services, except that such medical services shall be for diagnostic and evaluation purposes only) as may be required to assist a handicapped child to benefit from special education, and includes the early identification and assessment of handicapping conditions in children.

What age groups may benefit from this Act?

P.L. 94-142 stipulates that all handicapped children, aged three to twenty-one years, may enjoy the special education and related services provided through this measure. There is also provision for the use of Federal monies for programs of early identification and screening.

Are there priorities in the expenditure of funds?

Yes. The given State must have established priorities for providing a free appropriate public education in the following manner:

First priority to children who are not receiving an education.

Second priority to children inadequately served

with the most severe handicaps (within each disability).

Correspondingly, there must be a priority in the expenditure of federal dollars received under this Act which conforms to those same priorities. Moreover, these priorities must be adhered to by both the State education agency and its local education agencies.

What is the formula for distribution of funds among the States?

P.L. 94-142 establishes a payment formula based upon a gradually escalating percentage of the national average expenditure per public school child times the number of handicapped children being served in the school districts of each State in the nation. That percentage will escalate on a yearly basis until 1982 when it will become a permanent 40 percent for that year and all subsequent years.

Formula Scale

Fiscal 1978	five percent
Fiscal 1979	ten percent
Fiscal 1980	twenty percent
Fiscal 1981	thirty percent
Fiscal 1982	forty percent

It should be carefully noted that such a formula carries an inflation factor, i.e. the actual money figure fluctuates with inflationary-deflationary adjustments in the National average per pupil expenditure.

What are the currently estimated dollar totals thus generated by this formula?

On the basis of the national average per-pupil expenditure at the time action on this legislation in the Congress was being finalized (approximately $1250, Autumn of 1975), Congressional sources drew up the following estimates for the first years under this new formula:

Fiscal 1978 (on the five percent factor)	$387 million
Fiscal 1979 (on the ten percent factor)	$775 million
Fiscal 1980 (on the twenty percent factor)	$1.2 billion
Fiscal 1981 (on the thirty percent factor)	$2.32 billion
Fiscal 1982 (on the forty percent factor)	$3.16 billion

Does the preceding guarantee actual appropriations?

No. This is the "authorizing" mechanism only. In other words, this formula will determine the absolute ceiling, beyond which ceiling no further dollars can be appropriated. But the dollars must still in fact be appropriated by the Congress.

Is there a limit on the number of children who can be counted as handicapped for purposes of the Federal formula?

P.L. 94-142 addresses the potential threat of "over-counting" children as handicapped in order to generate the largest possible federal allocation. The measure requires that the total number of children counted should not be greater than that number which equals 12 percent of the total school-age population of the State between the ages of five and seventeen, inclusive. It must be emphasized that this limitation relates to the Federal entitlement only, and in no way places a limitation on the number of children assessed as handicapped by the States and their localities for their own purposes. Furthermore, this limitation has no relation to the mandates for serving all handicapped children contained in this Act.

Is there a limitation on the number of children with specific learning disabilities (SLD) who may be counted for purposes of the federal funding formula?

The U.S. Commissioner of Education may, within one year, provide detailed regulations relative of SLD, including the development of a more precise Federal definition, the prescription of comprehensive diagnostic criteria and procedures, and the prescription of procedures for monetoring of said regulations by the Commissioner. If the authorizing committees of the House and Senate disapprove the Commissioner's regulations, then a ceiling on the number of children with learning disabilities who may be counted by the State for purposes of the formula will be included when the new formula takes effect. The ceiling would provide that not more than one-sixth of the 12 percent of school-age children (aged five to seventeen inclusive) who may be counted as handicapped children served may be children with specific learning disabilities.

What is the relationship of this Act to P.L. 89-313?

Children counted for purposes of generating an entitlement under this Act may not also be counted under the formula for P.L. 89-313, the program of supplemental educational services for handicapped children in State operated or supported facilities.

How does a local education agency participate under this Act?

P.L. 94-142 contains a substantial pass-through to the local school districts. In the first year of the new formula, 50 percent of the monies going to each State would be allocated to the State education agency, and 50 percent would be allocated to the local education agencies. In the following year, fiscal 1979, the LEA entitlement would be enlarged to 75 percent of the total allocation to a given State, with the SEA retaining 25 percent. This 75-25 arrangement commencing in fiscal '79 becomes the permanent distribution arrangement. The current State control of all funds is retained for the remainder of fiscal 1976 and fiscal 1977.

Are there constraints upon this pass-through?

Though P.L. 94-142 authorizes a substantial local entitlement, there are numerous "strings attached"

The State education agency must refuse to pass-through federal monies generated when:

The school district does not conform to the overall State plan requirements contained in this Act and in existing law (such as full-service goal, confidentiality, etc.);

The school district fails to meet the local application requirements;

The State deems the local district unable to make effective use of its entitlement unless it consolidates its entitlement with the entitlement of one or more other school districts (thus allowing great flexibility in funding arrangements);

When the program for handicapped children within the school district is of insufficient size and scope;

When the school district is adequately providing a free appropriate public education for all handicapped children with State and local funds. (This provision is permissive. The State education agency does not have to do so.);

When the State determines that one or more children in a local school district can best be served by a regional or State center.

Furthermore, P.L. 94-142 sets a flat monetary minimum. If a school district, after counting all of its handicapped children served, cannot generate an allocation for itself of at least $7,500, a pass-through to that school district does not occur.

This provision is, of course, also aimed at encouraging various sorts of special education consortia in order to make a meaningful use of the federal dollars.

What are the major requirements under this Act?

P.L. 94-142 makes a number of critical stiuplations which must be adhered to by both the State and its localities. These stipulations include:

Assurance of extensive child identification procedures;

Assurance of full-service goal and detailed timetable;

A guarantee of complete due process procedures;

The assurance of regular parent or guardian consultation;

Maintenance of programs and procedures for comprehensive personnel development including in-service training;

Assurance of special education being provided to all handicapped children in the "least restrictive" environment;

Assurance of nondiscriminatory testing and evaluation;

A guarantee of policies and procedures to protect the confidentiality of data and information;

Assurance of the maintenance of an individualized program for all handicapped children;

Assurance of an effective policy guaranteeing the right of all handicapped to a free, appropriate public education, at no cost to parents or guardian;

Assurance of a surrogate to act for any child when parents or guardians are either unknown or unavailable, or when said child is a legal ward of the state.

It is important to observe that an official, written document containing all of these assurances is now required (in the form of an application) of every school district receiving its federal entitlement under P.L. 94-142. Correspondingly, such a public document also exists at the State level in the form of the annual State plan which must be submitted to the U.S. Commissioner.

Parenthetically, the State education agency is responsible for monitoring compliance by its local school districts with respect to these stipulations. The U.S. Commissioner has corresponding monitoring responsibilities with respect to State education agency compliance.

What if a school district is too small to qualify or cannot offer programs of sufficient size and scope?

Provision is made in the Act for a type of educational unit larger than the local education agency. An intermediate educational unit is defined as a public authority established by State law to provide free public education on a regional basis to handicapped children. Unlike the other consolidated arrangements allowed under this Act, where authority is shared equally among the local districts thus consolidated, the intermediate educational unit is self governing.

Such an intermediate educational unit, when so determined by the State education agency, may have all of the rights and responsibilities under this Act of a local education agency and may receive a federal entitlement.

What are the supplanting provisions?

In the use of the federal dollars generated under this formula, both the State agency and the local education agencies must maintain their own expenditure levels. In other words, they may not supplant State and local dollars with federal dollars.

However, if the State agency provides convincing evidence to the U.S. Commissioner that the State is making available a free, appropriate public education to all handicapped children within the State, and if the U.S. Commissioner certifies that declaration, then the U.S. Commissioner may waive the non-supplanting provision in whole or in part.

What is the "excess cost" feature?

P.L. 94-142 provides that federal monies must be spent only for those "excess cost" factors attendant to the higher costs of educating handicapped children. A given school district must determine its average annual per-pupil expenditure for all children being served, and then apply the federal dollars only to those additional cost factors for handicapped children beyond the average annual per-pupil expenditure. Such a requirement does not obtain for the State education agency in the utilization of its allocation under

this Act. However, the State education agency is required to match its allocation on a program basis, but is not required to match with new monies.

When must all handicapped children be served?

P.L. 94-142 requires that every State and its localities, if they are to continue to receive funds under this Act, must be affording a free public education for all handicapped children aged three to eighteen by the beginning of the school year (September 1) in 1978, and further orders the availability of such education to all children aged three to twenty-one by September 1, 1980.

However, for children in the three to five and 18 to 21 age ranges, such mandate does not apply if such a requirement is inconsistent with State law or practice, or any court decree.

Is there a requirement for individualized instruction?

The State education agency must guarantee that there is a written individualized education program for each and every handicapped child in the State, developed jointly with the parents or guardian of each child, and reviewed at least annually and revised where necessary. The local agencies must guarantee the same individualized program for all children within their educational jurisdiction.

What procedures are contained in the Act to protect the educational rights of handicapped children and their parents?

Those provisions, of previously existing law (P.L. 93-380, the Education Amendments of 1974) toward the guarantee of due process rights are further refined in P.L. 94-142, and their scope is substantially enlarged.

Basically, the State education agency must guarantee the maintenance of full due process procedures for all handicapped children within the State and their parents or guardian with respect to all matters of identification, evaluation, and educational placement whether it be the initiation or change of such placement, or the refusal to initiate or change. Interested individuals are strongly urged to read Section 615 of the Act ("Procedural Safeguards") in its entirety.

It should be observed that the P.L. 94-142 refinements take effect in the first year under the new formula, i.e. fiscal 1978. In the meantime, those basic features of due process as authorized in the prior Act (P.L. 93-380) must be maintained by the States.

It should be further noted that, when the parents or guardian of a child are not known, are unavailable, or when the child is a legal ward of the State, the State education agency, local education agency or intermediate education agency (as appropriate) must assign an individual to act as a surrogate for the child in all due process proceedings. Moreover, such assigned individual may not be an employee of the State educational agency, local educational agency, or intermediate educational unit involved in the education or care of the particular child.

Can Federal money under this Act be withheld?

The U.S. Commissioner must cut off funds to a given State education agency if that agency is in substantial noncompliance with any of the major requirements of this Act. In such an instance, the Commissioner must also cut off funding for those programs specifically designed for handicapped children under the following titles:

Part A of Title I of the Elementary and Secondary Education Act.

Title III of the Elementary and Secondary Education Act (innovative programs) and its successor, Part C., Educational Innovation and Support, Section 431 of P.L. 93-380.

The Vocational Education Act.

Moreover, the U.S. Commissioner may order the State education agency to cut off the flow through to a given school district if the U.S. Commissioner evidences substantial noncompliance by a school district.

What are the parameters of State education agency authority and responsibility under this Act?

P.L. 94-142 requires that the State educational agency be responsible for ensuring that all requirements of the Act are carried out. Moreover, all education programs within the State for all handicapped children, including all such programs administered by any other State or local agency, must meet State educational agency standards and be under the general supervision of the State education agency. This provision establishes a single line of authority within one State agency for the education of all handicapped children within each State.

Is there special encouragement to serve preschool handicapped children?

P.L. 94-142 carries a special incentive grant aimed at encouraging the States to provide special education and related services to its preschool handicapped children. Each handicapped child in the State aged three through five who is counted as served will generate a special $300 entitlement. It should be noted that this incentive entitlement goes to the State education agency and must be used by the State education agency to provide further preschool services. Additionally, this entitlement requires a separate "line item" appropriation, independent of the larger P.L. 94-142 appropriation.

Is there special encouragement for the removal of architectural barriers within existing school systems?

P.L. 94-142 authorizes such sums as may be necessary for the U.S. Commissioner to award grants to pay all or part of the cost of altering existing buildings and equipment to eliminate architectural barriers in educational facilities. Such provision is aimed at assuring certain handicapped children an appropriate public education in the least restrictive environment. As in the case of the previous heading on preschool incentive, the actual money for this component must be separately appropriated by the Congress.

Are private facilities eligible to receive funds under this Act?

Children in private elementary and secondary schools may receive assistance for their special education under this Act if:

Such children are placed in or referred to such schools by the State or local education agency as a means of carrying out public policy;

An individualized education program, as required by this Act, is maintained for such children in private facilities;

The special education is at no cost to the parents;

The State education agency determines that participating schools meet the standards that apply to State and local education agencies;

The children served in such facilities are accorded all of the educational rights they would have if served directly by public agencies.

Is a formal advisory panel mandated in P.L. 94-142?

P.L. 94-142 orders that each State shall have an advisory panel to be appointed by the Governor or any other official authorized under State Law to make such appointments. This panel must be composed of individuals involved in or concerned with the education of handicapped children, including handicapped individuals, teachers, parents or guardians of handicapped children, State and local education officials, and administrators of programs for handicapped children.

The panel shall have the following duties:

Advise the State education agency on unmet needs relative to the education of all handicapped children within the State;

Comment publicly on rules and regulations issued by the State and procedures proposed by the State for distribution of funds;

Assist the State in developing and reporting such data and evaluations as may assist the U.S. Commissioner.

Are the State allowed to reserve monies for administration of the Act?

The State education agency is permitted to reserve to itself from the total allotment to the State under this Act—in any given year—five percent or $200,000, whichever is greater, to support its administrative responsibilities. This administrative reservation must be taken from the overall State education agency allocation, i.e. from the 50 percent State educat.on agency allocation in fiscal 1978, and from the 25 percent education agency allocation of fiscal 1979 and thereafter.

What national evaluations are mandated?

The U.S. Commissioner must evaluate the impact of this Act on an annual basis and provide a full report to the Congress not later than 120 days after the close of each fiscal year.

That annual evaluation shall include the following special evaluations:

An evaluation of the effectiveness of individualized instruction;

An evaluation of the effectiveness of educating handicapped children in the least restrictive environment;

An evaluation of the effectiveness of procedures to prevent the erroneous classification of children.

Will vital data be generated on a regular basis?

The U.S. Commissioner is required to provide to the Congress and the public at least annually—and is required to update annually—data and information on the educational status of the Nation's handicapped children, such as the number of children served and unserved within each disability, the kinds and number of educational personnel employed, etc.

Are the Nation's educational systems encouraged to employ the handicapped?

P.L. 94-142 stipulates that recipients of Federal assistance under this Act shall make positive efforts to employ and advance in employment qualified handicapped individuals.

How long will this Act be in force?

P.L. 94-142 is established as a permanent authority with no expiration date.

The above data was based wholly on the law itself. Since the publication of this first overview the proposed regulations have been developed. The regulation package is essentially a duplication of the law. In only a few instances has additional definitions been given.

Our task here is to clarify for you the implications and requirements of the law on the local education agency and the resultant implications on the educators in the local district or its special education unit. In order to accomplish this let us examine those specifics of the Act that will have most impact at the local level. These sections are taken from both the law itself and the proposed regulations published December 30, 1976.

Applicability to State, local and private agencies

The law and its regulations apply to all state agencies that play a part in education of handicapped children. At the state level it includes such agencies as Mental Health, Children and Family Services, Juvenile and correctional facilities.

All programs must however, be under the supervision of the State Education Agency. Needless to say all rights are extended to children in local education agencies. Most significant in this section is the rights of those in private educational facilities. All personnel must insure that children in these facilities are extended the same rights as all the other children. The law is specific in its requirement that children in private schools will receive, free appropriate public education, and an individualized educational plan, and that students and parents will have equal rights to procedural safeguards, least restrictive placements, and confidentiality of records.

Definition

Critical to the law is its definitions specifically spelled out in the regulations. While there have been large controversies over how certain definitions have been written, the following presently stands.

"Handicapped children" means those children evaluated as being mentally retarded, hard of hearing, deaf, speech impaired, visually handicapped, seriously emotionally disturbed, orthopedically impaired, other health impaired, or as having specific learning disabilities, who because of those impairments need special educational related services.

Right to a Free Appropriate Education

Each state plan must guarantee the right to a free appropriate education (FAPE) no later than September 1, 1980. The age requirements will vary according to state statutes. In Illinois, because education of the handicapped is mandated age 3-21, the age will be 3-21. This may vary from state to state but on a national basis will be 6-18 in states who have no other form of mandated handicapped education.

The real question here is what does FAPE mean. The regulations define it as all costs of education. The most conflicting area is costs for students in residence full-time. The regulations state that a state may use any and all of its resources to provide residency, however, whenever placement in a public or private residential program is necessary to provide a free appropriate public education to a handicapped child, the cost of the program, including room and board, must be at no cost to the parent of that child. Thus, it is easy to see that all costs for diagnosis, development of the individual educational plan and the delivery of services falls into the area of the FAPE.

Full Educational Opportunity Goal

Through its LEA's, each state must set in play a plan to reach a full educational opportunity goal for its handicapped children by September 1, 1980. These goals are more broad than those of FAPE. They cover both program options as well as non-academic services, such as extra-curricular services, and activities. The full-opportunity goal is broader in the terms that it is an intent by the State and its LEA's to reach a certain level and is future oriented. A state could remain in compliance with the law even if it does not reach its goal. However, if a state or its LEA's do not provide a free appropriate education to each child, it would be in violation of the law. The FAPE section is much narrower in its scope and definition.

Priorities

The priorities of 94-142 are simple and are:

1. Unserved children — children who are receiving no public education.
2. Underserved children — who are receiving some but not an adequate education.
3. Excess costs of children served.

All funds must be expended in an effort to identify and serve unserved children before second priority children are addressed. In most instances both will undoubtedly be addressed at the same time. Only when a state can show that if it has met priorities one and two can any movement be made to pay excess costs of children served. The procedure to move to this level is complex and requires a great deal of confirming data, as well as approval by the commissioner of education. It is unlikely that any state will move beyond priority one and two children in the first several years of the law.

In addition to the above priorities, each state will be required to develop by handicap, a list of priorities on a need basis for the state.

Individualized Educational Plan (IEP)

It is this area of the law that will most effect the educator at the local level, and will be the most influential in providing for each child. Each child will be required to have an individualized educational plan to be carried out by the LEA. This plan is outlined specifically in the regulations in regard to who must participate and what it must encompass. The plan must be reviewed on an annual basis. The plan must be prepared and ready for implementation at the beginning of the child's school year. It will serve as the format for the child's education.

Participants in development of the plan are:

1. LEA representatives, other than the child's teacher.
2. Child's teacher or teacher's — special or regular who are responsible for implementating the plan.
3. One or both of the child's parents.
4. Where appropriate, the child.
5. Other individuals at the discretion of the parent or agency.

Needless to say, all those involved in a diagnosis of a new child will need to be involved. Illinois stands somewhat fortunate in this respect, as we have already implemented such procedures. However, the addition of the parent in the federal law is much more demanding. Appropriate times will need to be provided so parents can attend. In the case of non-attending parents, the LEA must take every step possible to insure that the parents are informed and understand the placement.

The content of this plan will have specific effect on the function of the educator. The law as well as the regulations spell out the content of the plan in detail. It must include:

1. A statement of the child's educational performance, including academic achievement, social adaptation, prevocational and vocational skills, psychomotor skills, and self-help skills.
2. A statement of annual goals which describes the educational performance to be achieved by the end of the school year under the child's individualized education program.
3. A statement of short term instructional objectives, which must be measurable intermediate

steps between the present level of educational performance and the annual goals.

4. A statement of specific educational services needed by the child, (determined without regard to the availability of those services) including a description of:
   (a) All special education and related services which are needed to meet the unique needs of the child, including the type of physical education program in which the child will participate, and
   (b) Any special instructional media and materials which are needed;
   (c) The date when those services will begin and length of time the services will be given;
   (d) A description of the extent to which the child will participate in regular education programs;
   (e) A justification for the type of educational placement which the child will have;
   (f) A list of the individuals who are responsible for implementation of the individualized education program; and
   (g) Objective criteria, evaluation procedures, and schedules for determining, on at least an annual basis, whether the short-term instructional objectives are being achieved.

This individualized plan of course has great significance in terms of the programs which will be delivered to each child. For a long time special education has said it was a specialist in dealing with individualized differences. P.L. 94-142 affords the opportunity for validation of this statement. The potential for improvement of services through proper planning is unending. The need for hours of additional staff work goes without saying.

The IEP will have other significance also. In terms of providing validation of effort and service from the LEA in its effort to meet the mandates of the law. The IEP's of the population served will stand as the most substantial body of validating information.

Much discussion on the Least Restrictive Alternative has taken place. This area is outlined below. In this area, of least restrictive, the IEP will serve as the dictator of what type of placement best suits the needs of the child.

If the plan is clear and concise, then the placement requirement, main-streaming, resource self-contained, private residential, will be arrived at through a logical series of conclusions. Thus, controversies as to where best to serve the child would be at a minimum. At the same time, if the IEP is not clear, general disorder could ensue. One must remember that under the law, each parent in the name of the child will have the right to hearings and to question the IEP at the child's placement. These matters can be substantially cleared up if the IEP is well developed and leads to a logical conclusion.

Least Restrictive Alternative

P.L. 94-142 dictates that handicapped children be educated to the greatest extent possible with non-handicapped children, and that removal of handicapped children from the regular educational environment occurs only when the severity of the handicap is such that education in the regular system with supportive services cannot be carried out.

Each state will be required to develop a continuum of alternative educational placements which will be made available. The continuum starts with the regular classroom as the least restrictive environment and follows:

1. Special classes.
2. Special Schools.
3. Home and instruction.
4. Instruction in hospitals and institutions.

Provisions must be made for supplementary services such as resource or itinerant to be provided in conjunction with regular class placement and placement in a school other than where the child would attend if not handicapped must be justified.

It will be the responsibility of the LEA to validate the restriction of the placement. This of course will be done through the child's individual education plan (IEP). The IEP will need to deal with the restrictiveness of the setting in which the child will be placed. The IEP should come to a logical conclusion with its supporting data in terms of the setting in which the child is to be placed.

This will have its greatest impact on the severe and profound handicapped areas, as these programs are traditionally operated in restricted settings such as special classes, special schools, and institutions. We will need to present clear evidence that the restricted setting rather than the regular classroom will benefit the child's program.

A variety of statements have been made on this area, ranging from the most expansive, that all handicapped programs will need to be operated in regular classrooms with special education teachers playing the support role, to criticism of the laws intential design of making children who require restricted placements appear as lesser citizens. Regardless, this section will stand, and it will be the IEP that must justify and prove the need for a specific placement. It then will be critical that throughout the development of the IEP the goal of placement is retained as one of the important overriding objectives.

Parent and Child Rights — Due Process

Parents and children have received a wide variety of procedural safeguards under P.L. 94-142. Most important to this group of rights is the mandate that the state and its LEA's communicate in a clear way the rights under the law.

When needed, this must be done in the active language of the parent or through an interpreter. It

must be shown that the parent understands the child's placement as well as his rights.

Following is a list of the safeguards.

1. Consent prior to evaluation.
2. Opportunity to examine records.
3. Independent evaluations —
   a. At the expense of the public school when a hearing determines additional or other information is needed.
   b. At the parent's expense if the public school evaluations are adequate and the parent feels an additional opinion favors their case.
4. Prior notice and consent for evaluations and placement.
5. Full explanation of all procedural safeguards and due process procedures.
6. Impartial due process hearing conducted at the local level by an impartial hearing officer at the expense of the state.
7. Right to appeal hearing decision for administrative review at the state level.
8. Right to civil action of state level review.

During the above due process procedures, the law states that the child will remain in his present placement unless the LEA and parent agree to a change.

The above are only definitions of the rights of parents. While these matters will in general be handled by the LEA administrative unit, each staff person needs to review the detail outlined in the law for each due process step.

Summary

The above has been an attempt to briefly review and highlight Public Law 94-142. In no way should it be taken as a complete detailing of the law, for this detail one must refer directly to the law itself and the proposed rules and regulations.

The statements above have been an attempt to familiarize the classroom and the LEA administrative staff with some detailing of the responsibilities which will need to be carried out at the local level.

Public Law 94-142 will have tremendous affect on the classroom educator. With proper planning and implementation, it should have a very positive effect. But, the special education community must realize that it has entered an era of detailed accountability in all phases of its operation.

One can easily look at the vast array of regulations and become so involved that the resultant factor could be declines in direct service to children. It will be essential that the positive outlook of special educators be retained as we begin operation of 94-142.

Public Law 94-142 is a positive approach to extending equal rights to the handicapped. Let us begin our operation of this law with that uppermost in mind. We stand on an interesting threshold, one that will allow us to deliver services to children we have been unable to serve; one that will allow us to improve services to those we have seen in need of additional services.

Implications of P.L. 94-142 for the Administration of Public Education for Severely Handicapped Students[1]

FRED P. ORELOVE
University of Illinois

The field of special education has been influenced greatly in the past seven years by events within the legal and political arenas. A large number of well-documented judicial decisions (see for example, Weintraub, Abeson, Ballard, & LaVor, 1976) have been made mandating a public education for all children regardless of the nature or degree of their handicap. Providing the necessary impetus for legislative action at the federal level, the right-to-education cases led to the passage of P.L. 94-142, the Education for All Handicapped Children Act of 1975. Congress set forth the purpose of the Act to:

> . . . assure that all handicapped children have available to them . . . a free appropriate public education and related services designed to meet their unique needs, to assure that the rights of handicapped children and their parents or guardian are protected, to assist States and localities to provide for the education of all handicapped children, and to assess and assure the effectiveness of efforts to educate handicapped children.

Clearly, such a comprehensive and full-scale law will have a potentially dramatic impact to the operation and administration of public schools. It would appear fruitful, then, to inspect the law closely to define what the school administrator must do to comply with the legal mandate.

Perhaps the impact of P.L. 94-142 will most strongly affect the administrator who is now directed to provide services for the severely and profoundly handicapped. The class of children termed severely and profoundly handicapped includes students

> . . . who are not toilet trained; aggress towards others; do not attend to even the most pronounced social stimuli; self-mutilate; ruminate; self-stimulate; do not walk, speak, hear, or see; manifest durable and intense temper tantrums; are not under even the most rudimentary forms of verbal control; do not imitate; manifest minimally controlled seizures; and/or have extremely brittle medical existences (Sontag, Burke, & York, 1973).

While it is obvious from this description that few public schools are currently educating these students, there are several reasons why P.L. 94-142 can best be analyzed with the severely handicapped in mind.

First, the law itself places its greatest priorities for providing a free appropriate public education (1) to those handicapped children who are not currently receiving an education and, (2) to those children with the most severe handicaps who are receiving an inadequate education. Since the majority of the severely handicapped are presently residing at home, in institutions, or in private care facilities (Brown, Nietupski, & Hamre-Nietupski, 1976), with many being denied an appropriate education, the law can be expected to have a significant effect on this group.

Second, increased national attention on educating severely handicapped children has resulted in substantially greater amounts of federal money for personnel training programs. Cohen and DeYoung (1973) note that teacher trainees must be made aware of the changing demands placed on them by recent litigation and legislation.

Third, an analysis of P.L. 94-142 in relation to the severely handicapped is beneficial since there is probably less known about these students than any other group of persons needing special education. Partly as a result of this dearth of information, severely handicapped children require the greatest quality and quantity of resources, including qualified teachers, support personnel and services, facilities, and materials. For this reason, there sometimes accrues the feeling among educators and administrators that if these students can receive appropriate and effective education and training, then the probability is high that other groups of children can be adequately served as well.

The paradox of the legislation thus becomes apparent: P.L. 94-142, designed to provide an appropriate education for severely handicapped children, simultaneously creates a new set of concerns and dilemmas for the public school administrator who is charged with the efficient implementation of the mandate. An important first step towards helping administrators realize this goal is to identify those broad areas in which they will in all likelihood have to make significant adjustments in the manner in which they implement a school program. The areas to be discussed include: child identification and child find, least restrictive placement, personnel selection, individualized educational plans, procedural safeguards, and professional rights and responsibilities. Specific administrative problems will be presented for each of these areas, emphasizing the provision of services to the severely handicapped.

Child Identification and Child Find

The first step in providing a free appropriate public education for all handicapped children between the ages of 3 and 18 years (3-21 by 1980) is to locate and identify those children in each state needing services. In one sense, the identification of severely handicapped children is fairly easy, since many of them exhibit physical and/or medical syndromes which are

1. The author thanks Barbara Wilcox for her helpful comments on an earlier draft of this paper.

readily identifiable at birth. However, locating the children when they reach school age presents a singular difficulty for the administrator. There exist a number of parents, especially in rural areas, who have kept their physically impaired or retarded child hidden for all of his/her life. It is extremely hard for someone to go door-to-door and to ask if there is a handicapped child at home who has never been enrolled in school. The administrator will thus need to work with the local mass media to broadcast radio and television announcements and draft newspaper notices, and with the school board and community to make phone calls, send letters, etc.

The second part of "child find" involves determining which children are and are not receiving needed special education and related services. Administrators within local educational agencies, therefore, will have to determine what is a "needed" or "appropriate" education. This decision is especially complex as it relates to the severely handicapped, since their education may include the teaching of eye contact and imitative responding, the development of community survival skills, and the elimination of self-destructive and self-stimulatory behaviors.

Least Restrictive Placement

The traditional choices available to the public school administrator for educational placement of severely handicapped students have been the "cluster" approach, i.e., serving all severely handicapped in a centralized and self-contained school, or the "dispersal" approach, i.e., operating classes of severely handicapped students in schools throughout the district. Although the question of educational placement continues to be debated, P.L. 94-142 promises to turn philosophical opinions of "mainstreaming" into decisions of method, i.e., how integration can best be accomplished. Specifically, the Act requires states to establish "procedures to assure that to the maximum extent appropriate handicapped children . . . are educated with children who are not handicapped." This requirement of physical integration presents several administrative ramifications.

First, many severely handicapped students are non-ambulatory and/or possess sensory deficits which will require modifications in school facilities, both exterior and interior. Such modifications might include ramps, combination lockers, special toilet facilities, crash bar doors, and modified drinking fountains. This type of building adaptation requires a combination of architectural/administrative/engineering expertise and an intimate appreciation of the student's abilities and limitations. Small mistakes, such as one inch too steep a slope on a ramp, could prove to be educationally and fiscally expensive.

A second problem growing out of the doctrine of least restrictive placement is the necessity of the public school administrator to work closely with directors of private agencies and institutions to develop transitional plans for moving severely handicapped students into the public school system. A host of educational, legal, economic, and logistical concerns will be confronted as the severely handicapped student is brought into the more normalized school environment. The administration will need to assume a strong child advocacy role to help allay the fears of the private school personnel, many of whom have an (educational and/or financial) vested interest in keeping the children.

A third placement related problem for the public school administrator is the confrontation of large numbers of angry, upset, and confused parents of both handicapped and non-handicapped children. Parents of handicapped children, whose children had been served in self-contained public or private schools or in institutional settings, may fear that their children will be subject to ridicule by non-handicapped children and that the demands of the integrated school setting will be too stressful for them. Some of these parents may have already been rejected one or more times from enrolling their children in the public schools because "no program exists" or "there is not enough room" or "he has to be toilet trained." They may be fearful, indignant, and/or cautious of the sudden willingness of that same school district to assume educational responsibility for their child. Similarly, it is likely that parents of the non-handicapped children will express concern that their sons and daughters are being educated with retarded and physically impaired children. These parents may worry that the present facilities and resources will be usurped by the handicapped children, and that their non-handicapped child will be slowed down educationally or might even "catch" retardation or spinal deformities. Administrators, then, would do well to in-service both sets of parents and to work closely with parent-teacher organizations to rectify any misconceptions and misunderstandings.

A fourth administrative concern resulting from integrating severely handicapped children within public schools deals with the community. As handicapped children become spread over a larger geographic region and within neighborhood schools, their visibility increases proportionately. Some people, such as those living near the school building, local storeowners, and policemen may have little or no experience with such children and may find it difficult to accept a child who makes strange noises, laughs at his hands, or has no arms or legs. Even though these citizens have no direct contact with the children in question, the idea of having them destroy the "purity" of their school disturbs them.

Finally, it should be borne in mind that the law requires placement of handicapped children with non-handicapped children to the *maximum extent appropriate*. A heavy responsibility lies on the administrator's shoulders to resist the insistence of certain parents, teachers, and school board members that it would be more "appropriate" to educate various severely handicapped children in a self-contained school. Despite the problems which might be caused by a

dispersal approach, there are at least several advantages to the integration of severely handicapped children with their less handicapped peers:

1. Such an approach may actually enhance community integration and acceptance by creating widespread mutual contact between regular education and special education students.
2. Most children would be placed in schools near their homes, resulting in greater convenience, fewer transportation problems, etc.
3. By dispersing severely handicapped children across a wide range of settings and personnel, diversified attempts to remediate difficult medical, transportation, and behavior management problems will be encouraged.

Personnel

In order to provide an appropriate education for handicapped children, qualified personnel are needed. For no area is this more true than for the severely handicapped. At the level of direct instruction, school administrators will need to hire the best trained people coming out of teacher-training programs for the severely handicapped. At the present, unfortunately, there exist only a handful of such programs providing the necessary kinds of experience and information, relative to the number of teachers that will be required shortly (Stainbach, Stainbach, & Maurer, 1976; Wilcox, 1977). The situation is best summarized by Wilcox (1977), who notes that "more has been done to date to provide severely handicapped students with appropriate educational programs than has been done to insure appropriate educational programs for their teachers!" (pp. 418-419). For the time being, then, it will be important for some administrators to actively recruit teachers who can handle the child with severe handicaps.

A second consideration, resulting in part from the small pool of trained teachers, is the necessity of providing in-service training to teachers who are in contact with the handicapped children. Even those teachers who had excellent pre-service training will require fresh methods and materials from time to time for dealing with behaviors that are many times unusual and quite persistent.

Another important aspect of personnel relations is that of helping to maintain teacher morale. Severely handicapped children display behavioral excesses that are fairly distasteful (e.g., rumination, self-mutilation) and often difficult to remove, and behavioral deficits (e.g., speech, social skills, motor behaviors) that are extremely hard and time consuming to remediate. Furthermore, in order to teach a severely handicapped student in the most effective manner, performance of skills needs to be verified across a number of different settings and personnel. Those times, therefore, that teachers of non-handicapped children normally have to rest and/or plan (such as lunch and recess) are spent in teaching necessary leisure time, dining, and social skills. The administrator must thus provide some type of relief system, probably involving sophisticated scheduling, to prevent teachers from "burning out" and becoming ineffective and dissatisfied.

A fourth personnel matter requiring administrative accommodations concerns the use of supportive staff, including professionals such as physical therapists, occupational therapists, speech and language therapists, recreational therapists, nurses, psychologists, and social workers; and paraprofessionals, such as teacher aides and student teachers. The education of severely handicapped children makes these ancillary staff members not a luxury, but a necessity. Not only must administrators locate qualified persons to fill these positions, but they must take an active role in coordinating a multi-disciplinary service approach. Crowner (1975) lists several potential problems to be avoided in establishing a multi-disciplinary program, including: (1) misunderstanding or lack of respect for the techniques used by other disciplines; (2) lack of common terminology; and (3) competition for time with students.

Individualized Educational Plans

A requirement which appears for the first time in P.L. 94-142 is the formulation of an individualized educational plan (IEP) for each handicapped child. The IEP is a written statement developed in an individualized planning conference by a representative of the LEA or intermediate educational unit, the teacher, the parents or guardian, and, when appropriate, the child. The statement is to include a description of the present levels of educational performance; annual goals and short-term objectives; a statement of specific educational services to be provided and the extent to which the student will be able to participate in regular educational programs; the projected date of initiation and termination of services; and objective criteria, evaluation procedures, and schedules to determine at least annually whether objectives are being achieved.

There are a number of advantages to written IEPs: they provide accountability to insure needed services are being provided, they help prevent misclassification of handicapped children, they enable the parent/guardian to become better acquainted with the child, and they help to foster better cooperation between the home and the school.

The administrator, however, faces a host of unsolved problems in conforming to the IEP requirements. First, teachers and other school personnel will have to be in-serviced to learn how to write IEPs in a format suitable to the state. Many teachers lack the expertise in writing both long-range goals and short-term objectives. Also, it is quite difficult in most cases to pinpoint the length of a given service; e.g., should physical therapy be carried out for a month, six months, or a year? Similarly, it may be hard to predict at the beginning of the school year exactly what services a severely handicapped child will need,

especially if s/he is new to the school system, as many will be.

Second, apart from the actual development of IEPs, the task of scheduling individual planning conferences promises to be difficult for the administrator. The law makes it quite clear that such conferences must be at a time and place mutually agreed upon by all parties involved. What about the parent who works or who cannot leave other children at home? What about the teachers whose union contract does not require them to attend meetings after school hours? A related procedural problem concerns the large amounts of time and money it will take simply to involve the parents and to inform them of their rights. It is conceivable that a person will have to be employed whose major responsibilitiy is to send out notices of proposed identification, evaluation, or placement; to make phone calls and home visits; and even to translate notices into the parents' native language.

A fourth aspect of the IEP which will require outside help is the monitoring of each IEP. Reviews, which are required at least biannually, should create a great deal of paperwork. Administrators might consider implementing a model for continuous re-evaluation of students in various services during diagnostic and long-term placements such as that developed by DeSpain, Williams, and York (1975)

Finally, the ubiquitous concern of confidentiality could pose some inconvenience. For the IEP to be of use to a severely handicapped child who may require four or five different supportive services, it will have to be rather widely available. Since IEPs are kept on file with the LEA, the recordkeeping system will thus need to be closely scrutinized.

Procedural Safeguards

Due process of law refers to the right to have any law applied reasonably and with sufficient safeguards, such as hearings and notice, to insure that an individual is dealt with fairly. P.L. 94-142 contains within it such procedural safeguards for the handicapped child and his/her parents or guardians, including: the requirement of written notice to the parents in their native language or mode of communication prior to the identification, evaluation, or placement of the child; the opportunity to request an impartial due process hearing; and the right to appeal the findings to the state and eventually the courts.

Due process is an area of which public school administrators have already grown wary. The Act is placing even tighter controls on the functions of the administration. There are guidelines which explicitly describe, for example, the steps to be taken to insure that parents have received the information informing them of their right to appeal. Furthermore, while procedures do exist to permit a school district to make an educational placement without the parents' consent, the onus is on the school to present extensive documentation of attempts to incorporate parents into the decision-making process.

Due process also presents a set of problems similar to those found in the IEPs, in that a large cost is incurred in both human and financial resources in complying with the law. Implementation of the due process aspects of P.L. 94-142 will require notices and phone calls to parents and special personnel to monitor parental and community education concerning the appeal process.

Finally, the reality of due process procedures is that it is an uncomfortable and emotional time for the parents and the child, especially in its latter stages. The prudent administrator will take all steps necessary when dealing with parents to prevent direct confrontation through litigation. Administrative finesse will become especially important with the sudden influx of severely handicapped children into the public schools as a result of inappropriate evaluations and placements being made by school personnel inexperienced with this class of students. It is essential that the administrator take measures to avoid an adversary relationship between the professional staff and the family. The most effective means of achieving this is for [illegible] to assume on equal footing with all parties concerned in seeking the best possible services for the student.

Professional Rights and Responsibilities

As suggested in the discussion of procedural safeguards, educational professionals in general, and public school administrators in particular, are being held increasingly accountable for the appropriate education of the handicapped children who they serve. One result of this state of affairs is the degree to which administrators are open to legal action either for failure to advise parents and/or other professionals of their rights or for failure to implement mandated due process procedures correctly and/or fully (Turnbull, 1975). Melcher (1976) speculates that over the next ten years "liability suits against school systems, teachers, support personnel, and administrators will increase markedly as the quality and accountability issues gain momentum. . . . Post hoc damage suits will be brought by adults who feel that the special education they received or failed to receive as children has harmed their development."

Severely handicapped children present an additional administrative concern because of their high incidence of medical problems. It would be a tragic by-product of P.L. 94-142 if competent administrators left the field for fear of being sued as a result of a teacher or therapist mishandling a child's seizure or dislocated hip. Some consolation may be taken in the knowledge that professionals as citizens and as employees are also entitled to due process procedures when faced with action for personal liability for damages or dismissal (Weintraub & McCaffrey, 1976).

A second potential problem for administrators serving the severely handicapped is created by a commitment to the "criterion of ultimate functioning" (Brown et al., 1976). This term refers to the cluster

of skills that each person must possess in order to function as productively and independently as possible in socially, vocationally, and domestically integrated adult community environments. Since skills taught to severely handicapped students in school rarely generalize to extra-school environments, there is a need to train the desired skills in the environment in which they are ultimately to be performed. Achieving this will mean a restructuring of both curriculum and instructional environment. A great deal of the programming will thus occur within the community, e.g., grocery shopping, bus riding, and laundromat use. In order to insure an appropriate program, administrators must support such non-traditional educational activities while protecting themselves against the possibility of a student accidentally getting hit by a car or becoming lost on the bus. To be both supportive and cautionary, the administrator should ensure that his/her most competent staff is implementing the programs, that all concerned are covered by the appropriate insurance, and that support in favor of the program is given whenever necessary.

Additional Considerations

Several other problems relating to the mandated provision of services to the severely handicapped are worthy of discussion. The first of these is the necessity for the administrator to adapt to certain instructional requirements specific to the severely handicapped. For example, the teacher of these students is going to need realistic materials and facilities, such as actual food and a kitchen in which to prepare it. It simply cannot be assumed that performance on a given task in one situation will result in a similar performance in the more naturalized setting. Programming this generalization from the classroom to the natural environment will entail an investment of time and money, particularly for a newly developed program.

Another instructional consideration involves a desire (as well as a legal mandate in many states) to keep a low teacher-to-student ratio. For effective education and training of severely handicapped pupils, a low ratio, becomes imperative. This is possible to do by involving students, parents, volunteers, and teacher aides.

A third problem related to instruction results from the schools having historically provided episodic services to severely handicapped students; i.e., briefly involving a professional over the course of an individual's schooling. Administrators should look instead to a longitudinal service delivery model in which assessment, intervention, and follow-up are part of an ongoing system, providing constant feedback to enact changes in programming based on the child's progress. Within this system therapy would be appropriately designed on an integrative, rather than isolative model (Sternat, Nietupski, Lyon, Messina, & Brown, 1976). That is, assessment and therapy would be implemented in the classroom and in the child's natural environment.

Besides being flexible with respect to changes in instructional requirements, administrators must confront problems of transportation unique to severely handicapped students. Special buses with pneumatic lifts may have to be purchased and special routes devised to accommodate the large geographical dispersion. Bus drivers will have to be trained in handling aggressive or sterotyped behaviors and seizures or other medical complications. An additional possibility would be to provide the driver with an aide. Severely handicapped children who are able to ride the bus with the other children will need to be taught travel skills. Other transportation considerations include the provision of special seating arrangements, help for the physically handicapped children in boarding and disembarking from the buses, and some accommodation for children not yet toilet trained. There are also children who are able to walk to school, but may not yet know how to cross streets properly, and still others who may become incapacitated in the streets due to various physical conditions or adaptations (e.g., seizures, crutches).

An additional long-range problem facing the administrator is the effect that educating severely handicapped children within the public schools will have on the rest of the school population. As the severely handicapped become a "permanent fixture" in the school, they will begin looking less and less "severely" handicapped. Similarly, students termed "trainable" or "moderately" retarded will take on more and more "educable" characteristics. Attitudes of teachers, parents, children, and school officials are bound to change and accompanying these shifts in affect and expectations will arrive new methods of service delivery, new ways of grouping, and new techniques of evaluating *all* students. For this, administrators must be prepared to bend accordingly.

Finally, the strength of the school program depends, to a large degree, on the capability of the administrator to work effectively and cooperatively with parents. Many parents of severely handicapped children have been told in the past by physicians, psychologists, and school personnel a variety of unpleasant and often inaccurate statements, such as "Your son is uneducable — take him home and leave him there," and "Your daughter cannot even be tested; it would be impossible to try and place her in a school program, even if one existed." As a result of this treatment, a number of parents have become upset, frightened, and suspicious of the administrator who then faces the formidable task of assuaging parental fears. A major way of doing this is to involve parents as much as possible in the planning and implementation of their children's programs. Additionally, many parents will need to be "in-serviced" to learn to handle difficult medical or behavior management problems and to implement various facets of the educational program in the home.

Conclusion

The main thrust of this paper has been to detail

some of the major implications of P.L. 94-142 for public school administrators as they take responsibility for the education of severely handicapped students. In doing so, a great deal of emphasis was placed on the *problems* that will be encountered in this massive undertaking. Some problems were over-simplified, while still others were totally ignored. It must be stressed, however, that despite the series of complex tasks facing the administrator, none is insurmountable. Some school districts in the country have been educating severely handicapped and other children needing special services for several years, having weathered the initial tribulations and aftershocks, and now handle the daily affairs routinely. Thousands more are undergoing similar labor pains in conforming to the legal mandate. Administrators are an essential link in putting into action the spirit of the law: that every child, despite his/her physical or mental condition, can benefit from an appropriate program of education and training.

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Educational Programs for Severely Handicapped Students: An Administrator's Perspective

T. TIMOTHY CROWNER
Madison Public Schools, Madison, Wisconsin

Who; When; Where; How? Questions about severely handicapped persons are on the minds of every special educator and community service agency worker. No one has a complete set of answers to questions about severely handicapped persons. However, the Madison Metropolitan School District (MMSD), in Madison, Wisconsin, has had five years of experience in working with the severely handicapped student. This paper will briefly explain what MMSD has concluded after five years of zero-exclusion programming for students with severe handicaps.

Who are the severely handicapped?

It is always surprising for those of us who work directly with the severely handicapped to hear this question. For us it is quite obvious . . . until we try to define it. Madison serves the severely handicapped in a generic model. Even though the severely handicapped child may have a physical disability or an emotional disturbance, we feel that the severely handicapped student's most common problem is an inability or very minimal ability to communicate effectively. This inability or minimal ability to communicate effectively may be a manifestation of profound subnormal mental ability, complex multiple physical handicaps, or the appearance of severe autistic-like symptoms.

Communication problems experienced by the severely handicapped person may be in both expressive and receptive language skills. Often the inability to communicate arises from primitive behaviors that the child has not unlearned such as throwing tantrums or from learned behaviors which interfere with the child's ability to communicate. For example, acting out as an attention getting device. Some children who have serious communication problems resulting from physical pathologies are able to communicate with proper compensatory training or prosthetic intervention. Once an effective two-way communication system is present for a child we no longer consider the child severely handicapped. A few children have very serious medical problems such as the inability to control body temperature. We do not consider such children severely handicapped per se. Orthopedic, home bound, or hospital programs have traditionally dealt with students with medical needs. Although, this system may seem rather arbitrary to the reader, in practice we have found it quite appropriate for limiting the size of the severely handicapped population.

When should we educate the severely handicapped?

When should we begin instruction and for what length of time during the school year? In regards to the first question; *when* is *now*. It is mandated and has been since P.L. 94-142 passed. As for what length of time, we have found that a twelve month school year is the only realistic option. Children with a chronic 24-hour a day handicap are handicapped regardless of time or physical setting. We cannot disrupt their education for three months of every year. This is particularly true of students in therapy or behavior shaping programs. It should be noted that we do not advocate a public educational summer school for all handicapped students. It is a difficult job to sort out who must have a twelve month program and requires the development of very specific local criteria.

Where should we educate the severely handicapped?

First of all, should we educate the severely handicapped in the public schools and secondly should they be in self-contained special education schools or in regular neighborhood schools?

One may go a lot further in answering this question if two assumptions are accepted: education is preparation for life, and not all severely handicapped persons are alike. Public school districts are a logical place to educate children. However, public education alone will not necessarily prepare a person for life, especially if the community has not prepared for the adult with severe handicaps. In short, the public school cannot help the severely handicapped without help and cooperation from community service agencies. Many agencies which have previously educated severely handicapped persons must now provide community survival services for the severely handicapped. Community survival services include respite care, group treatment homes, advocacy programs, transportation services, recreational activities, and after school day care. Interagency cooperation is no longer a luxury it is a necessity.

Madison will have eliminated the self-contained special school as of the fall of 1977. Of the 300 students who are moderately to severely handicapped, only 15 students have been identified who would be inappropriately served in a regular elementary, middle, or high school. All 15 students are over 16 years old. For these students instruction is provided directly in the community. Consequently, teaching occurs in bowling alleys, at job sites, in restaurants, and on street corners. School environments are not considered relevant to normalization for these older students. Another note should be made that much of

the education for the younger severely handicapped person takes place outside of the classroom as well.

How should we serve the severely handicapped?

A portion of this question has already been answered. We should take the severely handicapped into actual community settings to teach them. Beyond this there are three essential components to the educational program for severely handicapped students:

1. Behavioristic
   a. Task analysis is necessary to break down skills you wish to teach; also developmental steps require a good deal of break down for both assessment and instruction.
   b. Behavior shaping strategies are important to the whole process of normalization.
   c. Measurement systems are essential for documentation of growth, and establishment of learning rates.
2. Developmental
   a. A major component of the curriculum involves facilitation of growth through various developmental levels.
   b. If a student's developmental level is not accurately pinpointed, instruction may possibly be well over or under a learner's developmental capacity.
   c. Knowledge of development must be applied in three areas: communication, cognition, and motor skills.
3. Therapeutic
   a. The purpose of therapy is to eliminate painful or distructive conditions. Most of these conditions interfere with learning.
   b. Just like the best education, the best therapy occurs in functional settings.

Programs for severely handicapped persons must be transdisciplinary. This does not mean that every school must have physical therapists, occupational therapists, language therapists and so on. It means that input from a variety of disciplines is necessary. However, most therapeutic goals can be achieved by well-trained teachers and well-advised families. These strong remarks offend many people who then raise questions of medical ethics. The only response is that severely handicapped children need so much help that it would require a therapy ratio similar to a teaching ratio which is about 1-5, to give the severely handicapped an ideal therapy program. This is impossible. Hiring therapists instead of teachers would be risky because, therapists generally lack training in too many other essential areas.

Madison Metropolitan School District operates its educational services for severely handicapped persons based on a series of assumptions:

Assumptions

1. Everyone has a right to an education. The purpose of an education is to help a person survive in his environment and to lead a fuller life.
2. Everyone has a right to treatment. The purpose of treatment is to correct destructive or painful conditions.
3. For children who have severe orthopedic or other handicaps, education and treatment are inseparable. One does not follow the other; they are interdependent.
4. Everyone has a right to take risks. Handicapped persons should not be overprotected.
5. Administrative convenience, which causes even unintentional bias toward a handicapped person, is a violation of that individual's rights.
6. The greatness of a community should be judged on the basis of how well it treats its least able.
7. In order to fulfill our obligations to the handicapped we must understand how they differ from the non-handicapped and from one another. This is in part the purpose of assessment.
8. There is a difference between structure and restriction. Human beings in a natural state change and grow with high degrees of structure; for example, the baby's nursery and daily routines are appropriate at certain times in a person's life, and lower amounts of structure are appropriate at other times. Restriction occurs when the degree of structure does not accurately match the needs of a given person in a given situation.
9. Based on the assumption about restriction two factors are important:
   a. Settings with very high structure through settings with very low structure should be available to our children.
   b. The purpose of assessment is, in part, to assure that an individual environmental structure is appropriate to his needs and abilities.
10. The location of a setting may or may not contribute to restriction. For example, if a regular elementary school has been poorly prepared to house a program for students who are retarded and the classroom teacher is incompetent, the retarded student may, all in all, be less restricted in an isolated special school.
11. In the long range, adjustment to the school setting is less important than adjustment to the community setting. One may follow the other but not always. For some students school and its traditional classroom structure is inappropriate. For these students instruction should occur right in the community. The purpose of assessment is, in part, to help decide when a student should be instructed in the community.
12. The worth of something being taught should be based on its functional value to the student. Functional does not exclude those subjects taught so a pupil can lead a fuller life, for example, music.

13. Students learn best when abstract concepts are taught through the practical media available in the school and community. For example, many mathematical concepts can be taught in the art room, in the dining room, or at a shopping center.
14. Children should be grouped so that they have an opportunity to relate to an appropriate ability range in their peers.

A group which is too homogeneous can be restricting. If the program you have evolved or have in mind can speak positively to each of these assumptions, then you are heading in the right direction.

Administrative Concerns for the Severely Handicapped in the Public Schools

LARRY R. DEW
Madison County Special Education District Region I
Granite City, Illinois

As a director of Special Education Services in the State of Illinois, my goal is to serve all handicapped children in the public school system. In the past our district has had up to 28 severely handicapped children in private schools. This year we have 18 and are in the process of placing 14 of these students into our public school special education program. The program consists of the following classes: four trainable mentally handicapped, three multiply handicapped, two early childhood education, and two emotionally disturbed classrooms. We will be placing one or two severely handicapped students in each of these classes.

This has come about from a population shift within our programs due to the resource room services that are available in all our elementary schools. The mildly handicapped children are presently being mainstreamed into their neighborhood schools which is permitting higher functioning trainable handicapped students to be placed in our educable program. Therefore, we currently have placements for 14 severely handicapped students in the above mentioned special education classrooms.

Due to the present lack of adequate support services not all schools will, or can, immediately program for the severely handicapped in the public school setting. Because we have support from the local school boards and the special education board, we are able to achieve our goal by next year. In the next paragraphs a brief discussion of our specific strategies and concerns regarding the placement of severely handicapped students in the public schools will be presented.

It goes without saying that superintendents and assistant superintendents are very important in implementing the initial stages of this program, particularly in regard to financial considerations. Presently they are concerned over the uncertainty of extraordinary care money, summer school funds, personnel salaries, and transportation funding. The present $2,500 tuition limit will probably be removed, but the extraordinary care money and supplemental help through PL 94-142 will be helpful.

Relations with universities and other agencies with expertise need to be established for inservice and preservice education. We have worked with the University of Illinois, the University of Wisconsin, and are starting to work with Southern Illinois University-Edwardsville. Our Southern Illinois Regional Special Education Association (one of the 13 low-incidence regional state-operated programs) also has expertise in the area of the severely handicapped and will be helpful when the students are placed in the public school programs.

Membership in professional organizations, such as the American Association for the Education of the Severely Profoundly Handicapped (AAESPH), publications, and conventions have been most helpful in gathering information and in answering many questions. Two staff members were sent to the 1975 AAESPH convention and seven staff members were sent to the 1976 convention.

We are currently involved in a year-long inservice training program for the staff that will be working with severely handicapped students in the 1977-78 school year. The staff includes teachers, principals, nurses, and support personnel. Unique competencies are needed for the instructional process for the old adage "dumb kids with a dumb teacher" is currently obsolete. Teachers of severely handicapped students will need different competencies compared to those necessary for teaching mild or moderately handicapped students. We are fortunate to have four teachers that have taught severely handicapped students in private schools.

In addition, cooks, aides, and bus drivers must also be involved in educational programming and be equipped with additional resources, materials, and equipment. These might include emergency care procedures, lift vans, two-way radios, and special menus just to name a few.

Regular classroom teachers and non-handicapped students must also be taken into consideration when serving the severely handicapped in the public school setting. A computer search through the Council for Exceptional Children's resources resulted in only one article that provided any information in regard to helping non-handicapped children understand the child with special needs. One very effective way to involve handicapped and non-handicapped students is by peer tutoring. There is numerous research in this area.

Facilities are administrative concerns also. Option here includes special school clusters or spreading severely handicapped students throughout the school system. There are advantages and disadvantages to each. We have decided to spread our severely handicapped students throughout three districts in seven locations. In this approach, handicapped students will be exposed to non-handicapped peers every day.

Student-teacher ratio is another concern to the administrator. Many private schools have too low a ratio which makes for an unreal functioning level. I think initially we might require a lower ratio, but

hopefully we could maintain a one to eight, or one to ten teacher-student ratio in the future. (Recess, lunch, and free time are no longer free time for the teacher, but learning time for the student).

Parents are expressing concern regarding public school placements for their handicapped children. I have been told that in Madison, Wisconsin, initially 80% of the parents opposed public school programming for their handicapped children. I would like to share with you the concerns of a parent meeting that we had in January. The major concerns were: (a) mixing non-handicapped children with handicapped children, (b) reactions of non-handicapped children, (c) physical therapy and speech therapy on a daily basis, (d) trauma of a new educational placement, (e) toileting programs, (f) class size, (g) physical stamina for a five-hour day, (h) medication, and (i) special transportation. All these concerns are taken care of in our present programming plans. In addition, each parent will visit the school and classroom where their student will attend next year.

SUMMARY

1. *Maintain good relations with private schools.*
2. *Hire qualified staff.*
3. *Maintain contacts with community agencies.* Such agencies would include: Department of Mental Health, Crippled Children, Division of Vocational Rehabilitation, Easter Seals, regional low-incidence program, and local hospitals, park districts, Shriner's, and retired citizen programs. You will need to educate some of these agencies to the needs of the severely handicapped.
4. *Reassure the parents of the severely handicapped students.* Parents must be reassured that the current level of service their children are now receiving in the private sector will be maintained, if not made better, in the public schools. You have told them you don't have a program for their children, and now you do.
5. *Encourage private school involvement in alternative areas.* Such areas would include: Preschool (0-3), 21 and over, respite care, community living facilities, and recreational programs.
6. *Encourage parental involvement.* Parents of handicapped children need to become involved and/or get elected to local school boards, join advocacy groups and other interested organizations.
7. *Study the Intermediate School District Concept.* Our goal is to place students in the most normal setting and the most normal setting is the neighborhood school. The most normal agent for this setting is the local school board, not an intermediate school district.

Making It in the Public School Classroom

CINDY FULK
Lincoln Development Center

At 8:00 a.m. the handicapped bus arrives at Tommy's door. It is the first week in November and Tommy's mother is now able to watch from the window as Tommy walks to the door of the bus. She smiles as she watches, thinking of how she'll be able to report at the Friday afternoon parent-teacher group that he can now board the bus alone. One of the three transportation aides greets Tommy and notes that he has learned to find an empty seat and needs only verbal prompting to sit down.

The other two aides are busy with their assigned groups. One is reinforcing each child in her group for remaining seated, the other checking again to be sure chair wheels are locked and that the little girl who had been rythmically banging her head against the metal seat in front of her is still involved with the stuffed toy she was given.

The trip this morning is relatively uneventful — one of those days when the driver could have gotten along with only one aide if it hadn't been for loading the children. There are no seizures and all of the parents must have remembered their toileting checks. The little boy who was sometimes given to striking out or biting others lost only one token.

As the bus pulls up to the school, the driver checks to see that the three teachers and their aides are waiting to receive the children. He also checks the bus and sees that two of his helpers are keeping the children seated while the third is moving an ungainly reclining chair toward the side door to be lowered on to the lift.

The teachers and aides make their way past the other children on the playground with their little clusters of children. More than one of them thinks about the day when their class will join the others — but first there is much work in social and motor skills to be completed.

The groups were formed on the basis of cognitive and language skills which makes them appear physically awkward. Each has one or more wheelchairs or walkers. One child in the "highest" group has a language board attached to his walker. Some children, conspicuously without hearing aids, are guided to watch and return simple sign language. They enter the school. The day begins.

Long denied their basic right to education, the severely and profoundly handicapped will be entering the schools with the legal and financial support that will all but guarantee the education they need. As education professionals we have the responsibility of assuring that these new programs are quality ones.

Much of this responsibility will fall on the classroom teacher who will interact with these students daily. The administrator's role in this is to assure that the teachers assigned to these students are as well equipped as possible to teach in this situation. The skills these teachers will need may vary a great deal from those of other classroom teachers — even those of other special education teachers. In hiring teachers for the severely handicapped classroom, the administrator must be concerned with the presence of these skills. The following is a list of teacher competencies. Local districts will need to assure that their teachers have these competencies upon hiring or can attain them through in-service training.

The teacher of severely handicapped students should have the ability to:

1. Work closely with a variety of people including parents, residential facility personnel, aides, volunteers, consulting professionals, other teachers, and community agencies.
2. Counsel and instruct parents.
3. Plan and provide training to aides and volunteers.
4. Manage aides and volunteers in a classroom setting.
5. Provide consultation to other professionals.
6. Use referral systems to request consultations.
7. Assess the adaptive behavior, language, cognition, and motor levels of students.
8. Task analyze skills for teaching.
9. Develop and prioritize behavioral objectives.
10. Plan and implement behavior change programs.
11. Use techniques such as manual, pictorial, looking, and language-board communication as alternatives to speech.
12. Use basic physical therapy techniques in handling students.
13. Develop and teach a curriculum including self-care, language development, motor skills, work behaviors, social and leisure-time skills.
14. Teach in spite of physical and sensory handicaps, learning disabilities, health problems, emotional and behavior problems.
15. Develop and use some system of reporting student progress within this curriculum.

In addition to selecting the right person for the job, the administrator can insure a successful program by providing teachers with the additional support that their unique situations demand. This can be done in several ways once the administrator is aware of the teacher's needs.

Providing appropriate classroom materials. It is imperative that the teacher of the severely and profoundly handicapped student have the materials that s/he needs available in the classroom. The teacher will not be able to make do with cast off textbook series, reams of dittoed worksheets, or even the old

standby — film strips. These students will need a variety of materials for each concept or skill they are learning, in order to generalize this learning. Their shorter attention spans make it doubly important that a variety of materials are available in each goal area.

Providing special programming times. The severely handicapped student has many special problems which make it necessary for him/her to receive programming and supervision at times when other students can be semi-independent. Unless special arrangements are made, this can result in the teacher spending the entire school day — recess and lunch included — with her/his students. These special arrangements include assigning a speech therapist with training in feeding problems to direct the lunch program, having specially trained personnel to program during recess and physical education, and using aides and volunteers to assist with special events.

Arranging for schedule flexibility. Due to skill deficits in self-care, socialization, movement, and communication, the teacher of severely handicapped students will be using a curriculum that will require flexible scheduling. The classroom will need to have learning centers and equipment to deal with the curriculum areas or students may need to use facilities available elsewhere in the school or community. Much work will need to be completed on a one-to-one basis which will necessitate assistance in programming for the rest of the class. In addition, the teacher will need time to provide training to aides and volunteers and to coordinate programs with parents.

Providing opportunities for additional teacher training. Most teachers of severely handicapped students will find themselves in need of additional training in some of the areas they will be teaching. Institutes and workshops provided for other teachers may have little or no value to them. It is important that they receive the time and the financial support to attend workshops or consult with other programs that provide services to the severely handicapped. This is a relatively new field in education and it will require administrative flexibility and aggressiveness to provide the in-service training needed to make these programs successful.

Providing support services. The severely handicapped student often has multiple problems which require the efforts of an interdisciplinary team. Some of the services that should be available are consultation from speech and language specialists, psychologists, behavior, physical and occupational therapists, medical personnel, and dieticians. In addition, the families of severely handicapped children may need social work and counseling services. Some of the assessing and programming may need to be carried out in the home.

Preparing other students and staff. Schools that will be receiving severely handicapped students for the first time will be able to avoid a number of adjustment problems if other staff and students know what to expect. This need can be met by using the time before the move wisely. Student assemblies, professional workshops and handicap awareness programs should be planned to give these people the knowledge they will need to become comfortable with the severely handicapped. They should know what problems to expect and what these students are and are not capable of doing. Similar programs in schools accepting EMH students for the first time have proven to be very successful.

Providing reinforcement. It would be very easy for the teacher of the severely handicapped to become isolated from the rest of the school community because of program differences. Reinforcement and motivation will have to originate from within herself/himself. However, even the best teacher might quickly become unmotivated if the school's administrator is not aware of the special needs. Rewards must come primarily from job satisfaction, but other professionals can reinforce this by including the teacher(s) of the severely handicapped in school activities. Similarly, the severely handicapped student must be given every opportunity to feel a part of the school which s/he attends. As long as our goal is normality, we must remember that the severely handicapped need the approval of those s/he is to model.

The administrator's role in assuring the success of programs for the severely and profoundly handicapped is of primary importance. S/he is an instrumental part of the team that will make these programs work. As educators we welcome the assistance in meeting this goal.

For further information on personnel preparation issues, the reader should consult:

Burke, P. J., & Cohen, M. The quest for competence in serving the severely profoundly handicapped: A critical analysis of personnel preparation programs. In E. Sontag (Ed.), *Educational Programming for the severely and profoundly handicapped.* Reston, VA: Council for Exceptional Children, 1977.

Horner, R. D. A competency-based approach to preparing teachers of the severely and profoundly handicapped: Perspective II. In E. Sontag (Ed.), *Educational programming for the severely and profoundly handicapped.* Reston, VA: Council for Exceptional Children, 1977.

Wilcox, B. A competency-based approach to preparing teachers of the severely and profoundly handicapped: Perspective I. In E. Sontag (Ed.), *Educational programming for the severely and profoundly handicapped.* Reston, VA: Council for Exceptional Children, 1977.

VII. PERSONNEL PREPARATION

Editors' Comments

If the increases in services for the severely and profoundly handicapped that have been achieved through legislation and parent advocacy are to be expanded, or, indeed, maintained, it is apparent that university training programs will play a tremendously important role. They must gear up to prepare *quality* personnel who can generate *comprehensive* educational services for severely handicapped students, and they must do so at both pre- and in-service levels. There has been a long-standing (though rarely spoken) assumption that the more retarded the child, the more retarded the teacher can be. Precisely the opposite is true: severely handicapped students need teachers with competencies that extend far beyond those required of the regular class or traditional special education teacher. In order to prepare these teachers whose skills must truly be beyond the ordinary there must be university programs whose resources and commitment are also beyond the ordinary.

In the opening paper, Wilcox raises a number of central issues in the preparation of personnel to work with severely handicapped students. Her central concern is that standards of excellence be maintained in training programs for teachers of severely handicapped and that training programs do not expand in an uncontrolled fashion turning out teachers who are insufficiently equipped to meet the complex and unique needs of severely handicapped students.

The papers by Birkenholz; De'raz; Sedlak and Sternberg; Wilcox describe ongoing or proposed programs to train teachers for severely handicapped students at state-supported universities in Illinois.

Issues in the Preparation of Personnel to Work with Severely Handicapped Students

BARBARA WILCOX
University of Illinois at Urbana-Champaign

The Education of All Handicapped Children Act (PL 94-142) requires that each State Educational Agency (SEA) include as part of its State plan a comprehensive system of personnel development. The purpose of the present paper is to delineate issues and positions that relate to the systematic preparation of personnel to work with the severely handicapped. The general areas addressed include (1) pre-service and in-service training to prepare teachers and other supportive service staff to effectively serve this population, (2) delineation of competency statements to serve as the basis of such training programs, and (3) appropriate certification of teachers of severely/profoundly handicapped students.

General Problem Statement

Staffing classrooms for the severely handicapped with qualified personnel presents a particular problem for several reasons, including:

1. The surplus of elementary and secondary teachers and teachers of the mildly handicapped throughout the state. Rather than hiring new applicants, school districts may transfer these surplus teachers into classrooms for the severely handicapped. Although these teachers may meet minimum standards for serving the general special education population, they have not been adequately trained for working with severely/profoundly handicapped children.
2. The lack of special education certification delineating requirements for those teaching the severely handicapped.
3. The insufficient supply of qualified personnel graduating from university-based pre-service training programs for teachers of the severely/profoundly handicapped.
4. The lack of field-based in-service training for teachers already serving the severely handicapped.
5. The lack of supportive service personnel (psychologists, speech and language therapists, social workers, etc.) with experience or with the requisite skills to effectively serve more severely handicapped students.

These and other problems can be overcome only with coordinated and quality efforts on the part of administrators, university faculty, parents, teachers and others interested in the delivery of improved and comprehensive services to severely handicapped citizens. Insistence on quality services is a responsibility not only of teachers and administrators but of those who train and certify them. Will all those involved accept the responsibility or forsake the victories achieved in the courts and in the law? To forsake the gains so hard won is to accept marginal state plans for service; to support marginal training programs in recommending less-than-competent graduates for certification; and to tolerate the assignment of impossible caseload responsibilities for supportive service personnel. To maintain or elaborate the gains of severely handicapped citizens is to demand quality performance by administrators, teacher trainers, and training program graduates. Burke (1977) asks poignantly, "[once] mired in the bureaucracy of the schooling process, can it be possible to improve inadequate services accepted initially on an emergency basis?" Such a relaxation of standards for the sake of expediency cannot be tolerated in teachers, administrators, or teacher trainers.

The following assumptions focus the remaining discussion of personnel preparation in the area of the severely handicapped:

1. The role of teacher/programmer of students with severe functional handicaps is exceedingly complex and extends far beyond the traditional teacher's role. While direct instruction remains a major part of the role, it is not its entirety. In order to effect substantial changes in the lifestyle of the severely handicapped, the teacher must be concerned with normalizing the interactions of society with the handicapped, with increasing both the amount and quality of services to the handicapped, with modifying the physical and educational environments to develop and support learning, and with the training of parents, professional, and non-professional personnel to maintain educational gains in non-school environments. The teacher assumes responsibility for advocacy and indirect service in addition to direct instructional duties. S/he serves as program manager of services provided from a number of services.
2. There exists a direct relationship between the level of the client's disability and the level of instructional competence required of his/her teachers: the more pronounced the disability, the more powerful and precise are the skills required of the teacher (Sontag, Burke, & York, 1973).

Issues Relating to Pre-Service and In-Service Programs Training Personnel to Work with Severely Handicapped Students

I. Pre-Service Programs

A. The number of training programs for teachers of the severely handicapped should be limited in number because
   (1) Although the demand for trained persons is presently high, the target population served is

relatively small and therefore in-state demands will be met within a relatively short time. The number of programs for teachers of such a low-prevalence population should not be allowed to expand in an uncontrolled fashion, perhaps meeting short-range needs while definitely creating long-range problems. Institutions of higher education must be responsive to the need for new types of personnel but, more importantly, must be *responsible* for the number and quality of program graduates.

(2) The resources required to support an adequate teacher preparation program are simply not widely available. Just as the role of the teacher of the severely handicapped includes far beyond that of the ordinary teacher, so do training programs preparing teachers for this population require resources in excess of those which support traditional personnel preparation efforts. Critical training program requirements would seem to include the following:

(a) Faculty with genuine interest, expertise and/or experience in serving the severely handicapped population.

(b) Departmental support for training, research, and development efforts directed toward the severely handicapped (so that committed faculty do not have to struggle for survival on the home front, as well).

(c) A well-conceptualized, competency-based program of teacher training and philosophy of service provisions to the severely handicapped.

(d) Severely handicapped students in sufficient number (and kind and degree) to support training activities.

(e) Sufficient practicum facilities to support the training program.

(f) Formal or informal in-service at the faculty level.

(g) Sufficient community or university resources to complement the Department of Special Education in the development of necessary trainee knowledge and competencies in areas such as psychology, vocational-technical education, occupational/physical therapy, and medicine.

(h) Trainee recruitment programs which assure teacher trainees with good social skills, strong academic credentials, and a commitment to serve the population.

(i) Limited trainee enrollment since field- and competency-based programs must be closely monitored.

(j) Local master teachers (those exhibiting the performance competencies delineated by the training program) or others with sufficient experience and technique to provide close supervision of trainees in the classrooms and to provide ongoing, informal in-service to teachers.

(3) Duplication of training efforts should be avoided in order to promote maximum utilization of resources.

B. Programs preparing teachers of the severely/profoundly handicapped should not be "dual programs" resulting in both special and elementary/secondary certificates. The rationale for such dual certification for teachers of the mildly handicapped is rather compelling. Since the least restrictive placement for mildly handicapped students is the regular classroom, the teachers of mildly handicapped students will, in all likelihood, be working closely with regular classroom teachers and must therefore be familiar with curriculum and methods of regular education. The difference between mildly handicapped students and their non-handicapped peers are more quantitative than qualitative and therefore some significant overlap is inherent in training. However, for more severely handicapped students the primary realization of "least restrictive environment" will be the self-contained classroom, and therefore, it is less necessary that the teacher be able to accurately reference regular education.

Several additional arguments against "dual programs" for teachers of the severely handicapped:

(1) The curriculum orientation required for severely handicapped students is significantly different from regular education in terms of skills for toileting, swallowing, mobility, etc.

(2) The explicit technology of instruction of the severely/profoundly handicapped is quite distinct from that of regular education.

(3) Given significant elective credits, it would probably be more appropriate for the teacher in training to work with the severely handicapped to exercise those electives in areas such as rehabilitation counseling, therapeutic recreation, psychology, psychopharmacology, occupational therapy, physical therapy, language development, social work, nursing, vocational technical education and early childhood education.

C. Training programs in special education should develop functional liaisons with other relevant university departments in an effort to provide appropriate training for supportive service personnel who will be serving the severely handicapped. Teachers cannot effectively be trained to be inter/trans/multidisciplinary service providers unless those types of interactions are modeled by faculty doing the training.

D. The training of teachers and other personnel to work with severely handicapped students should be heavily field based. Mere academic exposure to methods and materials is not enough. Ideally, during the period of program development and formative evaluation of the program, practicum and student-teaching sites should be as close as

possible to the university in order to be a source of feedback to program planners.

E. Pre-service training efforts should not be limited to BA/M.Ed.-level teachers but should attend to the preparation of paraprofessional and auxiliary personnel.

F. Training programs must set high standards for themselves and for their graduates. The quality of graduates is more important than quantity of graduates, particularly in the area of severely handicapped. The potential for public backlash against the special education profession is great if severely handicapped students are served by teachers who can effect no significant changes in their life style or condition.

G. Training programs at any level must be experimental in nature. Since educational programs for severely/profoundly handicapped persons are so new, trainers will need to build a system with the flexibility to add new information/technology as it is generated. Clearly, much more will be known about how to train teachers for this population in five years than is known today.

2. In-Service Programs

A. Since severely handicapped are being served in many cases by uncertified or undertrained teachers and by non-educational personnel (nurses, ward staff), the need for in-service training is great. In response to this need, training programs should be maximally available for the retraining of those currently responsible for the severely/multiply handicapped. This would include training for direct and ancillary service staff in addition to teachers and teacher associates.

B. In-service should be provided through an existing delivery system rather than in an unplanned shotgun fashion. In earlier years, when teacher preparation opportunities in special education were limited, there was a tendency to encourage the importation of one or two "add-on-courses" to provide certified teachers. Such itinerant offerings are indeed a disservice since they tend to imply that special preparation can be acquired "cafeteria style," without reference either to appropriate laboratory experiences or supervision of such experience. It is suggested that such courses and programs be offered for certification only when:

(1) Approved in advance by an institution of higher education as part of a sequential, planned preparation pattern of similar quality and intensity as that delivered on campus.

(2) Taught by personnel who have knowledge, skill and personal experience for teaching such courses and who are approved by an institution of higher education.

(3) There is extensive supervised practicum application of knowledge and skills.

(4) Assurance has been received from the area school districts that there is a defined need for such a course as part of the region's in-service program for general and/or special education personnel.

In-service activities unrelated to the garnishment of credits toward certification should be subject to similarly stringent criteria. These qualifiers dictate limited options if quality in-service is to be delivered.

C. In-service activities should focus on the development of local expertise rather than foster continued reliance on outside experts.

D. In-service training for those working with severely handicapped must remain a priority even after programs are in place and judged to be of sufficiently high quality. Because of the demanding nature of the population served, the need for an ongoing in-service program will not diminish and will be used to continue skill building by teachers and to provide the espirit de corps to sustain the efforts and energy levels needed to deliver quality service. The responsibility for in-servicing recent training program graduates should be shared by the employing school/agency and the training institution. University participation in graduate follow-up activities will increase training program accountability, provide important formative evaluation to the training program, and expand functional relationships in the field.

Issues Relating to the Delineation of Competencies for Personnel Working with Severely Handicapped Students

1. Training institutions should base program development activities on the delineation of trainee competencies that are to be developed over the course of training. Competency statements should take the form of behavioral objectives and include statements of conditions, specific trainee behaviors, and criteria for competent performance. These competency statements should be publicly available for professional examination. Training programs in the area of severely/profoundly handicapped should be defined by documented trainee performance rather than simply by participation in a particular set of university courses.

2. This competency delineation and program description should not just list *areas* in which students are to develop skills but should define specific trainee *behaviors* (either paper and pencil or child performance) that are to be demonstrated before program exit. The major criterion in the evaluation of teacher competence should be *child behavior change*. While informational competencies (paper and pencil performances) are appropriate in some instances, the bulk of the competency statements should be based on the trainee's ability to translate information into educational application and to bring about documented change in pupil performance. See Attachment A for a sample competency statement.

3. Programs preparing certified special education per-

sonnel to work with severely/profoundly handicapped should delineate competencies in at least the following areas.

A. *Referral, evaluation, and assessment* including:
   - Child find procedures
   - Due process procedures
   - Criterion-referenced and norm-referenced measurement
   - Data collection and data summary

B. *Team planning* including:
   - Transdisciplinary approach to service delivery
   - Team staffing procedures
   - Preparation of individualized educational programs (IEP)
   - Basic knowledge underlying participating disciplines

C. *Instructional planning and implementation* including:
   - Behavior management principles and technology
   - Direct instructional formats
   - Task analysis
   - Curriculum development
   - Evaluation and adaptation of instructional materials
   - Design of educational and environmental prostheses
   - Normal developmental sequences
   - Programming in the following areas:
     - Prerequisite learning skills (imitation and task attending)
     - Mobility and gross and fine motor skills
     - Perceptual development
     - Self-help
     - Language and communication
     - Functional academics (reading and math)
     - Vocational skills
     - Social skills and social presentation
     - Independent living and community mobility
     - Recreational and leisure skills

D. *Medical and physical management* including:
   - Information on the educational implications of various medical conditions
   - Physical positioning, handling, and transfer
   - Maintenance and management of prosthetics
   - First aid
   - Seizure management
   - Monitoring the effects of medication

E. *Consultation, training, and indirect service* including:
   - Work with parents and siblings
   - Training and work with teacher associate personnel
   - Functioning as a program manager
   - Design and implementation of in-service and workshop activities

F. *Student and program advocacy* including:
   - Community coordination
   - Knowledge of State rules and regulations

4. Programs preparing non-teaching personnel to provide supportive or auxiliary services to severely handicapped populations (e.g., speech and language therapists) should work with special education trainers to provide both information and practicum-based experiences that will enable them to work effectively with the population.

Issues Relating to the Certification of Personnel to Work with Severely/Profoundly Handicapped Students

The issue of type(s) of certification appropriate to teachers of severely handicapped in Illinois has not been resolved. Resolution of this issue is central to the delivery and maintenance of quality educational services to severely handicapped since the gains exhibited by students are a function of the skills of the teacher. The question of certification also relates rather directly to training activities and personnel preparation strategies. Clearly those involved with the standards and processes of certification need to work closely with trainers to develop and implement appropriate credentialing procedures. The following positions should be examined as certification decisions are made.

A. There are two possible patterns for certifying teachers to work with severely handicapped population:
   (1) Multiple endorsements in categorical areas (TMR, ED, PH) that reflect the variety of problems this student group presents.
   (2) A generic endorsement to serve the severely handicapped without any categorical reference.

B. Given that the standard special certificate in Illinois covers grades K-12, the background of those certified to work with the severely handicapped should reflect extensive practicum experiences with *more than one severely handicapped population* (e.g., severely, profoundly retarded, autistic or severely behaviorally disordered; physically impaired; multiply handicapped) *at more than one age level* (early childhood, primary, intermediate, secondary, adult) *in more than one educational setting* (integrated public school, self-contained facility, workshop, residential program). Regardless of whether certification was generic or consisted of multiple endorsements, teacher experiences and competencies must reflect the needs and variety of the population.

C. Since there are teachers currently serving the severely/profoundly handicapped who are uncertified or inappropriately certified, some mechanism may have to be developed to grant an emergency certification or to evaluate their skills against the competencies required of current training program graduates. If such "grandfathering" were to occur it should be limited in scope (e.g., to those who are currently as of August, 1976 serving the severely/profoundly handicapped, not to anyone who is uncertified and *wants* to teach the population) and duration (e.g., as of August, 1979 those covered by the emergency measure would have to demon-

strate the competencies currently demanded and meet certification requirements).

Some General Recommendations

Based on the issues delineated above, it is recommended that:

1. *The number of training programs in Illinois preparing personnel to work with the severely handicapped be limited in number.* Careful decisions must be made concerning the number of program graduates needed in the state and the relative ability of programs to support quality and comprehensive training efforts. Careful statewide planning now will insure sufficient quality personnel at all levels without an over-expansion that will haunt the field in the future. One mechanism for such a coordination would be the formalization of a Severely Handicapped Personnel Preparation Consortium to plan, set sandards for, and monitor training efforts in the state. Since the question of quality control in personnel preparation in this area is, indeed a national one (cf. Bricker et al., in press), it would be appropriate for the Consortium to include national representation (e.g., from the American Association for the Education of the Severely/Profoundly Handicapped; in addition to representatives from I.O.E. and state IHE's.
2. *Certification to work with the severely handicapped should be granted only on the basis of program entitlement.* This would compliment the quality control standards imposed on universities (see above) and would reflect the relationship between training and certification efforts that would maximize the impact on the delivery of services to severely handicapped students. It is widely recognized that transcript evaluation results in relatively simple accrual of endorsements to a single certificate. The discontinuance of transcript evaluation would help assure that certification is based on the completion of an approved and systematic program of training. It is recommended that an advisory group be established to assist the Certification Section of I.O.E. in evaluating proposals for program approval in the area of the severely handicapped. It is further recommended that certification take the form of a "Severely Handicapped" endorsement on the Standard Special Certificate.

It is only through coordinated and systematic efforts to realize these recommendations that comprehensive quality services to the severely handicapped can be assured.

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APPENDIX A

Sample Performance Criterion in a Competency Based Program Preparing Personnel to Work with the Severely Handicapped

Consider the following performance criterion:

Given at least 2 students each exhibiting behavioral excesses that interfere with the delivery of instruction (e.g., self-injurious or stereotypical behavior), the trainee will design, write, and carry out an instructional program to eliminate or decrease the frequency of the target response.

The completed instructional plan will include the following components:

(a) behavioral statement of problem
(b) specification of program objective(s)
(c) measurement procedures
(d) baseline performance data
(e) description of the intervention
(f) charted pupil performance data and evidence of formative evaluation
(g) procedure designed to enhance the generalization and mainteance of behavior change

Products must document behavior change or show systematic program revision on the basis of performance data and be acceptable to supervisor/instructor.

In addition to some obvious requirements (e.g., to operationally define behaviors of concern, to collect and chart data), the trainee clearly has to be able to list and define the basic procedures to weaken behaviors, to consider the factors influencing the effectiveness of the various alternatives, to rationalize his/her selection of a procedure, and so on. Each performance criterion requires a rather sophisticated process of integrating knowledge and performance into a whole that approximates the actual demands of the job. Trainee competence is assessed on this type of problem solving rather than on a series of splinter skills taken out of their natural context. To state training competencies as large performance units with a number of component skills is both efficient and criterion valid.

Illinois State University Teacher Preparation Program for Educators of Severely and Profoundly Handicapped Individuals

JANE LEE BIRKENHOLZ
Illinois State University, Bloomington, Illinois

Great changes are presently occurring in educational planning and service provision for severely and profoundly handicapped individuals. Those of us who are affected by this process are very aware of the discomfort of change. The present is a time of anxiety for parents of the handicapped, informally trained teachers, advocacy groups, and individuals with vested interests.

This is a time, however, to use the best available knowledge and technology in establishing securely funded, well organized programs, made available to all who need them.

The purpose of this paper is to trace the history of services to severely and profoundly handicapped individuals, to describe the development of a teacher preparation program which applies the best we know within circumscribed limitations, and to consider some anticipated future developments related to the preparation of teachers for severely and profoundly handicapped individuals.

History of Educational Services for Severely and Profoundly Handicapped Individuals

The history of present services to severely and profoundly handicapped persons involves (1) the expansion of institutional and day care services, (2) broadened public school responsibility, and (3) the development of teacher preparation programs.

Institutional and Day Care Services: Prior to the 1940's few severely and profoundly handicapped people survived in each generation. Modern medical advances in the 1940-50's, however, have made survival possible for an appreciable number of these people. The few severely and profoundly handicapped persons present when residential institutions were begun in the United States, in the 1860-70's, were NOT admitted. Institutions began as educational facilities, and new teaching techniques developed in Europe by Seguin, DeCroly, and others, promised "cure". Residents were expected to return to their communities as rehabilitated citizens. Thus, only the higher functioning handicapped individuals were admitted. Children with recognizable syndromes, such as Down's, epilepsy, cerebral palsy and other physical handicaps were not admitted.

When individuals who were institutionalized failed to acquire enough skills to pass as "normal", discouragement and a feeling of hopelessness settled over the pioneers who had possessed such high hopes. Institutions became custodial in nature, offering minimal survival care and warehousing large numbers of people in huge isolated facilities. As institutions became custodial, individuals functioning at lower levels and having additional handicaps were accepted: Residential populations increased rapidly until the 1950's.

Even under custodial conditions, however, many institutional workers (themselves trained on the wards by others) trained the residents to be as self-sufficient as possible and to help with the work. Since the attendants were generally not sophisticated enough to understand the "real" meaning of a low I.Q., they taught receptive residents many skills (Colwell, 1969). A few psychologists also became interested in the learning capabilities and training possibilities of these people. The abilities of the residents were never greatly publicized because of the low interest and expectation levels of society and of even the professionals. However, more recent literature, while not in sources traditionally thought of as educational (Lucky and Addison, 1974), reports accomplishments by severely and profoundly handicapped trainees.

During the 1950's parents of handicapped children began organizing for the benefit of their children: The National Association for Retarded Citizens was born. It pushed for beneficial legislation and established programs on a day basis for children for whom the public schools had no programs. These private programs included trainable as well as educable children. The more severely handicapped were gradually added. Later parent groups also began programs for handicapped adults, establishing work-activity and sheltered workshop programs. These programs were sporadic, too few in number, and were established with little expertise by the volunteers, who usually were parents. Gradually, however, these programs grew in number and quality until today when they represent the large majority of programs for non-institutionalized severely and profoundly handicapped children and adults.

During the 1960's many institutions, hoping to delay or prevent institutionalization of severely and profoundly handicapped children, also developed day programs within their catchment areas. These programs had many of the same problems experienced by parent groups, but some were certified by state educational agencies, employed teachers certified in allied areas, prepared individual educational prescriptions, and became quite sophisticated. On-campus institutional educational programs also increased in number and quality: Formal in-service training of personnel was encouraged by federal grant monies.

Over the last fifteen years, greater numbers of trainable mentally retarded persons have been admitted to public school classrooms, and the number of classes for physically handicapped individuals and persons with medical problems has increased. But, at present, few children classified as severely and profoundly handicapped are being served directly by public school programs. The technical know-how for teaching these children is found in the day programs and in the residential programs, many of which employ educators, psychologists, physical and occupational therapists, language development specialists, medical personnel, and vocational trainers, who have experience, expertise, and dedication in working with this population.

Broadened public school responsibility and the development of teacher-preparation programs: A summative history of the development of the common schools in the United States shows a progression from privately financed tutorial-type programs to free public schools through the high school level (Frost, 1966). By the 1850's the grade-level approach to the elementary school was well established. Education was free to all who could get to school and could master the academic curriculum. Most teachers were self-trained, a few pioneer "normal" two-year programs were in operation, and colleges were beginning to introduce "teaching courses" into their curricu[illegible]

By the turn of the century the tracking system to serve the less able and/or less fortunate was in operation. Teacher-training programs, generally two years in length, included practice teaching and were becoming associated with colleges and universities.

Although they generally existed at the "charity" level, by the 1930's classes for the mentally and physically handicapped became more common in the United States. Schools were seldom mandated to provide "non-academic" programs. Programs of a non-academic nature were usually left to the discretion of the mental health departments of each state. Teacher-preparation programs for special education were getting under way and certification requirements for special education teachers were appearing in many localities.

By the late 1950's special education was receiving considerable legislative support. Pressure from parent groups resulted in new and better services for the handicapped. Trainable mentally handicapped children were admitted to the public schools in forward-looking communities — a goal still incomplete today. Teacher-training programs in special education consisted of four or five years of training (including liberal arts background) and were firmly tied to the colleges and universities. Certification procedures included entitlement through teacher-training institutions.

During the 1960's special education received much greater legal and monetary support. The Bureau of Education for the Handicapped, Project Head Start, and passage of the Elementary and Secondary Education Act of 1965 (ESEA) all contributed to expanded programming for the handicapped. The numbers of special education and certification categories increased.

While educators in general have not been interested in providing services for the severely and profoundly handicapped (Quick, Little, and Campbell, 1974), the 1970's has been a time of litigation for the rights of all handicapped individuals. In 1976, through P.L. 94-142, free, appropriate, public education was mandated for all, and severely and profoundly handicapped children have been added to the public school rosters.

Education has been redefined as:

> "The process whereby an individual is helped to develop new behavior or to apply existing behavior, so as to equip him to cope more effectively with his total environment. It should be clear, therefore, that when we speak of education we do not limit ourselves to the so-called academics. We certainly include the development of basic self-help skills. Indeed, we include those very complex bits of behavior which help define individuals as human. We include such skills as toilet training, dressing, grooming, communicating, and so on." (Roos, 1971, p. 2)

We need teacher training programs and certification requirements which assure quality education for both children and adults who are severely and profoundly handicapped.

At this time the public education sector holds the crucial funding for these educational programs. The universities can provide an interdisciplinary and analytical orientation toward teacher-training. Much practical "know-how" is available from individuals and agencies who are already providing programs for severely and profoundly handicapped individuals. A team-work approach will assure the best possible programming for severely and profoundly retarded persons — the newest population to become the responsibility of the public school (See Table I).

TABLE 1

Generalized Historical Evolution of Educational Services to Severely and Profoundly Handicapped Children and Young Adults in the United States

Approximate Dates	Services for Severely & Profoundly Handicapped Children	Public Schools			Teacher Preparation
1850	Very few S & P children existed S & P NOT in institutions Institutions were Educational Facilities — only higher functioning were admitted	Schools operated graded Academics—free to all	Shorter ↑	Informal ↑	Most teachers self-prepared Colleges introducing "teaching courses"
1900	Institutions became Custodial S & P found in institutions but still few in numbers	Tracking system for less able and less fortunate	TEACHER TRAINING PROGRAMS	TEACHER TRAINING PROGRAMS	Two-year teacher-preparation programs — associated with colleges and universities
1930	Institutions trained Responsive residents Experimental teaching of Severely/Profoundly Handicapped	A few EMH and other Special Classes existed			Teacher-preparation programs for special education and certification began
1950	Medical advances lead to increasing numbers of S & P A.R.C. groups began programs for TMH, later added S & P	Legislation supported special education			Special Education Teacher-Preparation Programs in Illinois Undergraduate & Graduate
1960	TMH entered public schools in greater numbers	Number of special education categories			Categories increased in number — TMH added
1976	S & P primarily served in private settings and institutions	Free, appropriate public education mandated for all, PL 94-142			Now S & P added — we need Teacher-Preparation and Certification Programs in universities
1977 Present	Technical know-how is HERE	Crucial funds are HERE	Longer ↓	Formal ↓	Interdisciplinary & Analytical Orientation toward Teaching HERE

Development and Description of a Preparation Program for Teachers of Severely and Profoundly Handicapped Children

The development of a preparation program for teachers of severely and profoundly handicapped individuals encompasses the following sequence: (1) defining the population to be served, (2) developing categories of necessary teacher competencies and delineating specific competencies, (3) determining an educational sequence which provides students the experience to gain these competencies, and (4) selecting and retaining suitable students.

Population Definition: After lengthy consideration and due acknowledgement of the short-comings and limitations of several alternative definitions, for purposes of program design severely and profoundly handicapped children were defined as:

> "Individuals having one or more handicapping conditions which, at the time of assessment, result in measurable or extrapolated intelligence quotients falling three or more standard deviations below the mean and who exhibit: (a) limited motor skill development, (b) marginal or no speech and language skills, (c) marginal or no self-help skills, (d) marginal or no group interaction skills, (e) extreme forms of disruptive and/or socially unacceptable behavior." (I.A.R.C., 1976, p. 1)

This population, then, is defined as functionally mentally retarded. A pertinent definition of mental retardation, however, might be that of Marc Gold (1969):

> "Mental retardation refers to a level of functioning which requires from society significantly above average training procedures and superior assets in adaptive behavior, manifested throughout life. The mentally retarded person is characterized by the level of power needed in the training process required for him to learn, and not by limitations in what he can learn." (p. 30)

"While the diagnosis of severe or profound mental retardation does communicate some meaningful information about a person, it communicates little regarding the unique and individualistic make-up of that person" (Cabanski, 1969, p. 11).

Teacher Competencies: Requests for competencies needed by teachers serving this population were made to various agencies: Lincoln Developmental Center (LDC), Peoria Association for Retarded Citizens (PARC), McLean Association for Retarded Citizens (MARC), Illinois Association for Retarded Citizens (IARC), and others. The response was 100%! Needed

skills, curriculum areas, and suggestions for types of training experiences all poured in with many comments of enthusiasm and reassurances to do whatever else was needed. There was a tremendous interest and determination to have the best possible teachers for these children. Since there was a remarkable consensus among the respondents, we were able to incorporate all their suggestions into our delineation of teacher competencies. A survey was conducted of the available literature to delimit resources available. While a plethora of journal articles, monographs, and books was not found, some literature appeared to be available on most topics of crucial import. Ultimately, teacher competencies were divided into four areas: assessment, understanding characteristics, program planning, implementation, and evaluation.

In the area of assessment, for example, several appropriate adaptive behavior scales were located. The Bayley Scales Infant Development (DuBose, 1976), Denver Developmental Scale, and the Uzgiris and Hunt Scales (Kahn, 1976) were found to be especially useful. The current focus on habilitation of clients rather than their classification promotes the increasing use of educationally relevant instruments. Several studies are now in progress to eliminate many of the weaknesses of present adaptive behavior scales in order to enhance their effectiveness as assessment devices (Faris, Anderson, and Greer, 1976). Accurate and adequate assessment of individual strengths and weaknesses is prerequisite to appropriate educational programming. "The value of a particular diagnosis will be determined on the basis of how useful it is in 'understanding' and working with that individual" (Cabanski, 1969, p. 11). The inclusion of parents in the educational process necessitates using clearly understandable, specific measures (Hoff, 1969; Lichter, 1976; Odle, Greer and Anderson, 1976; Ray, 1974; Roos, 1975).

Many assessment devices are directly tied into curricula developed for severely and profoundly handicapped individuals. The Portage Project, Project E.A.R.N., Project M.O.R.E. and others offer developmental curriculum sequences in various skill areas.

Since the teacher of severely and profoundly handicapped children is a member of an interdisciplinary team, it is mandatory that an understanding of the educational relevance of terminology used in other disciplines, such as physical and occupational therapy, social work, psychology, medicine, and others be attained (Sontag, Burke, and York, 1973). Concomitantly, the teacher is a trainer of others less skilled in the discipline of teaching, such as educational aides, parents, and volunteers. The teacher is also expected to educate ancillary school personnel in appropriate interactions with these children.

When characteristics of this population are described, caution must be exercised. Individuals are extremely idiosyncratic, have unexpected abilities which should be capitalized upon for further educational advancement, and have usually been victims of the self-fulfilling prophecy of our low expectation levels (Gold, 1969). Now *use* "try another way." When a method of instruction fails, we can no longer assume that the mental ability of the child prevented him from acquiring a skill or knowledge (Colwell, 1969). Ultimately, "the height of a retarded person's level of functioning is determined by the availability of training technology and the amount of resources society is willing to allocate" (Gold, 1969, p. 31). Anyone can learn something (Deiker and Bruno, 1976).

On the other hand, change and progress by the severely and profoundly handicapped must not jeopardize their emotional security. David Slavitt (1973) in his book *The Outer Mongolian* deals with conformity as a means of self-protection. When helplessness is rewarded by attention and care, helplessness may be more satisfying than independence. Maintenance of newly acquired behaviors must be approached with these considerations. The assumed reward of being promoted — away from friends and routine into a new environment may be frightening to a child or an adult. It is possible that being the most competent in a lower group is more rewarding than becoming the least competent member in a higher group. The individual would certainly be more vulnerable in the new environment.

Program planning, curriculum, methodology, and evaluation can be facilitated by the many helpful guides and techniques becoming available (e.g. Anderson and Greer, 1976; Haring and Brown, 1976; Lake, 1974; Rentfrow and Rentfrow, 1969; Terdal and Buell, 1969). While behavior-change techniques did not exist at the beginning of special education (Haring, 1975) there is almost a surfeit of materials available at this time. Application of behavior modification concepts to the severely and profoundly handicapped can be fairly direct, but adaptation is crucial; and additional difficulty is apparent when behavior control must be done entirely with positive reinforcement (Ragain and Anson, 1976). Evidence about learning in this population is gradually being accumulated with immediate implications for teaching.

We at Illinois State University shared our personal experiences in working with this population and in preparing others to work with these individuals. Based on these experiences, relevant literature (Colwell, 1969; Haring, 1975; Roberts, 1976; Rynder, Bruininks, and Gordon, 1974; Sontag, Burke, and York, 1973; Stainback, Stainback, and Mauer, 1976), and field input, we drew up a list of competencies needed by teachers of severely and profoundly handicapped students in the areas of assessment, understanding and application of educational characteristics, and program planning, implementation, and evaluation. These competencies follow.

Competencies needed by teachers of severely and profoundly handicapped persons:

1. Assessing severely and profoundly handicapped individuals
   a. Given an individual needing an educational

plan, the teacher selects appropriate evaluation techniques and interprets the results after administration.

b. Given a set of instruments/procedures and a client description, the teacher selects appropriate teacher-administrable instruments based on the needs and characteristics of the students.

c. Given data sets derived from a variety of sources, the teacher establishes learning priorities in multiple domains based on the results of assessment across those domains.

d. Given learning priorities, the teacher projects measurable goals and enroute methods for achieving the goals for the learner.

e. Given recommendations from members of a multidisciplinary team, the teacher writes an educational plan specifying those recommendations in the form of measurable objectives and relating them to other developmental goals and activities.

2. Objectives for understanding and applying characteristics of the target population

a. Given terminology related to common disabilities of the target population, the teacher states the meaning and application to individual learners in that population.

b. Given a list of characteristics relating to severely and profoundly disabled individuals, the teacher describes and/or defines the potential parameters and their resulting consequences for educational programming.

c. Given a description of parent problems/needs, the teacher states alternative procedures for resolving the problem.

d. Given a list of potential professionals related to the education/treatment of severely and profoundly disabled persons, the teacher defines specific roles of each professional in selecting and maintaining an education program.

e. Given a list of potential support personnel related to the education/management of severely and profoundly handicapped persons, the teacher states the possible limitations and the resulting roles which should be played by support personnel.

3. Objectives for designing, implementing and facilitating programs for the target population

a. Given formal and informal evaluation instruments in developmental areas (i.e., motor, communication, academic, social, vocational, recreational, and behavioral development) the teacher selects, administers, interprets and applies the results in writing educational prescriptions for severely and profoundly handicapped persons.

b. Given diagnostic data, the teacher directs the development of an interdisciplinary, individualized program for each severely and profoundly handicapped person.

c. Given data on individual client needs, the teacher develops (in conjunction with the client, surrogate, advocate, or parent(s)) a set of long and short term instructional objectives* complying with child developmental scales, current literature, pertinent laws, rules, and regulations, least restrictive placement alternatives, the normalization principle, and behavioral principles in the following general areas:

* Self-help activities of daily living,
—communication skills, language arts, reading,
—motor development,
—number usage,
—socialization and affective development,
—pre-vocational and vocational skills,
—recreational activities,
—behavior management and development, and
—cognitive development.

d. Given data on individual needs and functional levels, the teacher develops a set of behavioral objectives utilizing the principles of task analysis, sequential curriculum development, and behavior modification principles.

e. Given objectives from associated specialists*, the teacher integrates the objectives to form a consistent, logical program.

* physician
—physical and occupational therapist
—language development specialist
—specialists in specific disabilities, such as vision and hearing
—social worker, psychologist, psychiatrist
—prosthetist

f. Given a set of interdisciplinary objectives, the teacher develops lesson plans to organize the implementation of the instructional program.

g. Given a description of the client population and available personnel, the teacher designs an instructional environment for maximal learning and development, including consideration of:
—physical arrangement and condition of the room and equipment,
—grouping of clients and personnel, and
—scheduling of clients and personnel.

h. Given a description of the client population and available personnel, the teacher prepares and uses appropriate teaching materials and equipment.

i. Given data on client needs and characteristics, the teacher produces, selects, and/or adapts audio-visual materials such as transparencies, games, manipulative objects, audio-tapes, and laminated materials to match those needs and characteristics.

j. Given a teaching situation requiring a multimedia approach, the teacher uses audio-visual

equipment including the tape recorder, film projector, overhead projector, listening stations, slide projector, video-tape camera and recorder, and language master.

k. Given a class of exceptional children, the teacher:
—establishes and maintains pupil attention,
—presents concepts unambiguously,
—reinforces and/or corrects pupil responses.

l. Given at least two different observational systems, the teacher records pupil behavior-change using those systems.

m. Given specific achievement in behaviors such as eating, dressing, and self-control, the teacher develops procedures for measuring the behaviors.

n. Given behavioral change data, the teacher writes concise and comprehensive progress reports required by school and state agencies.

o. Given a description of ancillary personnel (i.e., classroom aides; foster grandparents; volunteers; pre-service students; program maintenance persons; teachers; dormitory personnel; and bus drivers), the teacher defines the duties, writes the job description, assigns tasks, supervises, then evaluates their performance, and provides in-service training to the above named ancillary personnel when necessary.

p. Given parent needs and characteristics, the teacher develops programs including:
—developing appropriate behavioral objectives for infant stimulation and curricular domains,
—applying behavioral management,
—instructional, evaluation, and reporting techniques,
—enacting of the advocacy functions, and
—providing accurate, specific information about the individual.

q. Given a set of community resources, the teacher:
—implements community planning strategies leading to the development of comprehensive and continuous services for severely and profoundly handicapped individuals; obtains budgets, allocates and reports the use of funds; assesses employment opportunities for clients, and plans accordingly;
—uses materials, equipment, human and other resources available at the local, county, state, or federal level for the benefit of severely and profoundly handicapped individuals;
—sets up a new classroom or program for severely and profoundly handicapped individuals.

4. Objectives for evaluating program effectiveness

a. Given diagnostic data, the teacher:
—records ongoing progress of clients,
—reports marked program effects based on differences between entry and current levels of client performance,
—develops individual program modifications,
—develops written reports to appropriate target audience.

b. Given diagnostic data, the teacher selects and uses tests and measures of performance to evaluate:
—arousal levels
—responses to sensory stimuli
—perceptual-motor skills
—independence skills (self-help)
—social interaction skills
—communication skills
—physical growth and development

Educational Sequence

A sequence of experiences which could yield the desired competencies was designed. Course work at the university was utilized as a basis for understanding principles and to increase efficiency at the fieldwork experience level. It seemed especially critical to assure the operational use of theoretical concepts in behavior, task analysis, and development (Smith and Sagan, 1976).

At the *freshman* level, observation was introduced in connection with the Introduction to Special Education course. During the freshman year students also take courses in general psychology, functional anatomy, human verbal development, fundamentals of speech, and nutrition, in addition to four other courses in the general undergraduate studies curriculum.

In the *sophomore* year students study additional functional anatomy, child growth and development, mental retardation, art for the exceptional child, music therapy, and participate in a new course, Field Work with Severely and Profoundly Handicapped Children. In addition, sophomores take fourteen credit hours of university general studies.

Junior level students spend one entire semester in a field placement, working in classrooms with severely and profoundly handicapped children. This is a full teaching week-in-week-out experience and includes all programmatic aspects for which teachers of these children have responsibility. Faculty meet with students on the site for instruction and analysis of experiences. Direct supervision is also provided to students in their assigned classrooms. During this semester the students attain skills and work toward the specific competencies listed at the outset of the program. In addition, they attend staffings, work with parents and aides, seek out community and other available resources, and acquire an understanding of the interdisciplinary nature of programming for severely and profoundly handicapped children. They design, implement, and evaluate curricula, teaching methods, and materials for the children. They learn to use various assessment measures and design programs based on the results. They learn to record and evaluate data from ongoing activities to assess pupil progress and program effectiveness. They observe a wide variety of programs for severely and profoundly

handicapped individuals, from infant stimulation through sheltered workshop; from public schools to institutions. They study the least restrictive placement options for residential and educational placements and other normalization issues.

The other junior semester is spent studying psychological measurement, physical defects, applied motor learning, sensory problems of the handicapped, and two elected credit hours.

The first *senior* semester is spent in the student teaching role, wherein the pre-teacher is expected to demonstrate competency in the skills defined as well as being an effective trainer of others who will work with the children. The student teaches in two different placements representing different ages, levels, and physically handicapping conditions. The last college semester is spent studying coursework in the social-philosophical-historical foundations of education, sensory-motor education or adapted physical education, techniques of working with parents, psychology of the exceptional child, and one elective course. Elective courses might be selected from a variety of fields, e.g., non-verbal communication, sign language, applied learning, behavior modification, or study in an area of deficit selected by the student. Most methodology courses and the "parents" course have required practicum experiences.

While the program is interwoven with a general college education, the specific training experiences for the Severely and Profoundly Handicapped Major constitute approximately 53-61 credit hours (approximately two academic years) of which 33-41 credit hours (60 to 66%) are direct full-time experience with these children. Haring (1975) suggests that ideally 80% of training should be practicum experience, while only 20% would be didactic. In order to meet his criteria, fewer college-based experiences which have applicability to other areas of special education as well as to the severely and profoundly handicapped could be counted. We agree with the Illinois Association for Retarded Citizen's Education Committee (1976) that "competencies are best demonstrated in a system which utilizes extensive supervised practicums and direct contact" with severely and profoundly handicapped children.

After five years of continuous field-based training programs for pre-teachers of the more mildly handicapped, the benefits which accrue to Illinois State University students in this type of training are becoming quite evident. We have found that students with practical experiences perceive more value in professional education courses and perform at a higher conceptual level. These findings are in agreement with those of Ayers and Brimm, 1976; and Parker and Withycombe, 1976. Experiences in actual situations stimulate problem solving and the realization of need for knowledge (Gamble, 1976). Assisting students to formulate their instructional problems and how to go about solving them is one of the primary responsibilities of the faculty team. Additional benefits accrue to faculty and field professionals, who realize their roles as expanded ones with increasing impact on the field of education (Boyer and Maertens, 1976).

Selection and Retention of Students

While no additional qualifications are required of students entering the major of special education for the severely and profoundly handicapped, field experiences afford prospective teachers the opportunity to determine whether they have the ability and attitudes required. Observation alone discourages some, more rigorous teaching processes and different curricular needs deter others. The development of appropriate attitudes is evidenced in self- and teaching evaluations made by both university faculty and field professionals (Stainback, Stainback, and Maurer, 1976).

Colwell (1969) states that the most important factors in teaching the severely and profoundly handicapped are that the person (1) be able and willing to adjust to new things, (2) be able to stay on a schedule, (3) be consistent and even in temperament, (4) get along with others, (5) speak clearly and distinctly and be adept at using gestures along with spoken commands, and (6) keep an objective attitude toward the child. Neither educational level nor intelligence proved to be crucial factors in the teaching process. As teachers increasingly become classroom managers and program designers, however, and receive training appropriate to their functions, this criticism should quickly fade. Colwell's description, however, may remain applicable to aides.

Because they will not be able to fall back on the usual supportive school personnel, students planning to enter this teaching field must become independent (Sontag, Burke, and York, 1973). They will face more medical, social, behavioral, and instructional problems than teachers of normal children. They will also lack the experience of being a part of such a system as a former student (a good foundation for role building). Teaching the severely and profoundly handicapped can be a lonely experience; often there is little or no response from students (Bryan, and Wheeler, 1976). The "burn-out" problem among teachers of the severely and profoundly handicapped needs immediate attention if we are to retain experienced teachers working at their maximum level of competence. Just as pre-professionals self-select to enter the program, it is their responsibility and prerogative to self-select *out* of the program if circumstances so indicate. Supportive counseling and other options for de-selectors increase the likelihood of retaining only those who are well suited to the teacher role.

Future Considerations in Teacher Preparation

One of the most needed services to the severely and profoundly handicapped is the training of their parents to deal effectively and comfortably with their serious and far-reaching problems. In addition to the continuity of programming between home and

school or residence and educational setting, meeting the support needs of parents will yield geometric increases in the abilities and competencies of the severely and profoundly handicapped. Teachers are quite likely to train these parents, guardians, grandparents, house parents, or foster parents, as part of their responsibility in teaching their children. While this type of training is already occurring in many programs, these services should be made available to all (Smith, 1974).

Within the professional life-time of today's preteachers many bio-medical and bio-technological advances such as drugs for altering personality, sensory protheses, behavior control by radio stimulation, drugs which raise the level of intelligence, and repair of the central nervous system (Boos, 1976), will come into common use. Teachers of severely and profoundly handicapped children will have many more possibilities of effecting increased competency in their students. By the same token, however, the teachers will have to adjust and readjust their expectations, objectives, and methods as individuals in their classes benefit from these scientific advances. It might be possible to begin with a functionally profoundly retarded child, and see him progress into normalcy or beyond: This would require a tremendous adjustment on the teacher's part!

Programs for the severely and profoundly handicapped have traditionally been the responsibility of the Department of Mental Health, churches, United Way, and private charity donations. The first faculty position, making the Illinois State University teacher preparation program for the moderately retarded a reality, was funded by the Department of Mental Health. Many of the same attitudes now voiced concerning the educability of the severely and profoundly handicapped were voiced about the moderately handicapped at that time. Since the inception of those programs, however, the functioning level of moderately retarded children and adults has risen dramatically. Many of them have attained some independent living skills and contribute to their own support: With appropriate educational programs many actually lost the label moderate and are called mildly handicapped.

Bellamy (1975) suggests that the difficulty level of tasks performed by and the productivity level of many of those labeled severe and profound have been grossly underestimated. He feels that vocational habilitation is a feasible goal for severely and profoundly handicapped adults. Remunerative work tasks are available; effective training techniques have been identified; and productivity can be maintained within normal ranges.

Williams (1967) points out that he has been unable to find an explicit statement that persons below a certain I.Q. are incapable of employment, and there are some profoundly retarded adults who are employed (National Association of Retarded Citizens, 1976). If the opportunities for severely and profoundly handicapped individuals to become more self-sufficient are not provided, they may never become self-sufficient and will remain victims of the all-too-familiar self-fulfilling prophecy. If these opportunities are provided, however, an increment in self-sufficiency at least similar to that realized by the programs for the moderately handicapped can be expected. When more appropriately trained teachers work with the severely and profoundly handicapped, each child's individual strengths and needs are more fully taken into account. Handicap often overshadows real ability which may be uncoverable with better teaching technology. As it becomes more obvious to the general public that even the severely and profoundly handicapped are NOT hopeless, increased support for programs will become available and more tolerance and acceptance will become evident. This will be a real test of *our* ability to work under conditions of delayed gratification.

While a few researchers and writers have been describing the capabilities of severely and profoundly handicapped individuals for some time (e.g., Anderson, et al., 1976; Bellamy, Peterson, and Close, 1975; Gold, 1969; Williams, 1967), typical educators have not been listening. With the passage of P.L. 94-142, however, much more attention and support can be expected for research with this population. Most of the research results will be applicable to teaching and planning for appropriate services (Cleland, McGavern and Case, 1976; Favell and Cannon, 1976; Haywood, 1976). Inter-institutional roles between university/institutions/schools may be developed, perhaps along the medical model, where the best professionals usually combine their practice with teaching and research. Such cooperation and collaboration will greatly increase our effectiveness in preparing teachers and in meeting the needs of severely and profoundly handicapped individuals. There are a few such positions today, but the need for the blending of expertise and distribution of expertise is very great.

Finally, I would like to close with a quotation from Estes (1976). While his writing was a plea for equal educational opportunity for another minority, his words are certainly appropriate to the framework of education for the severely and profoundly handicapped:

> "We must provide adequate education for ALL children, commensurate with their abilities and interests, within the framework of their lives, regardless of their . . . backgrounds. A concomitant conviction is the reality that this country will only achieve its ultimate potential greatness by utilizing the talents, abilities, and strengths of all its citizens to the optimum. The notion that each individual . . . has the potential for making a . . . contribution to society mandates that the thinking and concerned citizens of this country see to it that our educational institutions, curricula, and personnel provide for this optimum result." (p. 387)

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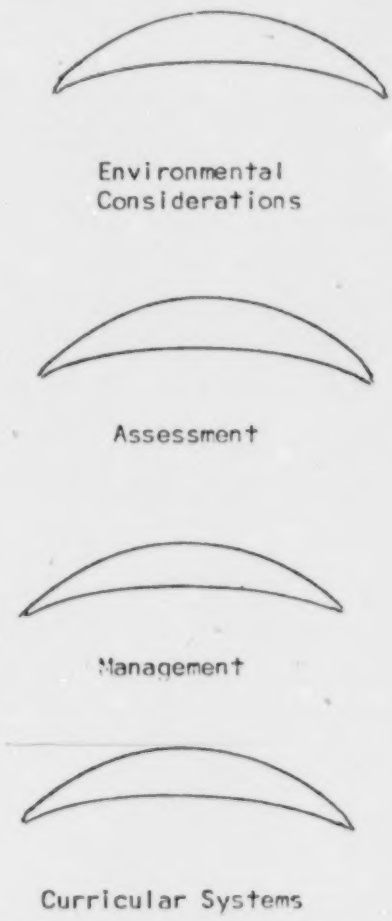
Training Teachers of the Severely/Profoundly Retarded: A Look at NIU

ROBERT A. SEDLAK and LES STERNBERG
Northern Illinois University, DeKalb, Illinois

The advent of full and comprehensive services to all handicapped children appears to be upon us given the creation and subsequent approval of the Education of All Handicapped Children Act (EAHCA) in November of 1975. Section 612 of EAHCA deals specifically with a state's eligibility to qualify for assistance and sets forth two priorities for special education provisions: (1) those handicapped individuals presently unserved and (2) those individuals classified as severely and profoundly handicapped. Focusing on the latter priority, it becomes obvious that training programs must be developed to insure that qualified individuals are prepared to deal with this population in all aspects of special education services. A cursory glance at teacher training programs in special education at various colleges and universities throughout the United States will invariably lead to the conclusion that a heavy emphasis is still being placed on training personnel in the area of high incidence handicapped (e.g., educable mentally handicapped, learning disabled, behavior disordered). Given the mandate of educating students in the least restrictive alternative or environment (i.e., mainstreaming), one would expect that many of the individuals typifying these handicapping conditions will have educational services rendered in regular classrooms rather than self-contained special education units. It should be obvious that skills needed to deal with high incidence handicapped cannot be considered synonymous with those needed to deal with low incidence handicapped (e.g., severely and profoundly retarded). The purpose of this paper, therefore, is to describe an innovative federally funded model graduate training program in the area of the severely and profoundly mentally retarded (SMR/PMR) developed by and currently in operation in the Department of Special Education at Northern Illinois University.

FIGURE 1. Umbrella Programmatic Model



Program Model

The SMR/PMR Graduate Program functions from three separate yet integrated operational components: coursework, concurrent practica and preservice/inservice coupling. The coursework is organized under an *umbrella programmatic model*, whereby content and concepts are dealt with on a supraordinate to subordinate basis.

Operationally, four core courses are offered on a fixed cyclical basis (one per semester). The initial course in sequence deals with environmental considerations of the severely and profoundly retarded with a heavy emphasis on understanding the generalized characteristics of this population. This is followed by a course dealing with assessment instruments and techniques to employ to gain a diagnostic and evaluative picture of each SMR/PMR individual. The third course concerns itself with a formulation of behavioral management techniques, and the last, with instructional systems to employ with the severely and profoundly retarded to develop adaptive behaviors ranging from ADL (activities of daily living) and rudimentary communication skills to preacademic and vocational skills. What is important to realize in this model is the dependence on attainment of prior informational competencies in order to understand and deal with following informational competencies. The umbrella model, operating from a fixed supraordinate

to subordinate content strategy, guarantees the realization of competency attainment.

The second component of the SMR/PMR Graduate Program is the *experience* or *practica arrangement*. Here, each core course is coupled with a concurrent practicum whereby each teacher trainee is required to take information presented in the course and utilize it in some predetermined fashion with SMR/PMR individuals presently situated in institutional, residential, private school and/or rehabilitative settings. Practicum settings are so arranged that the trainees may transfer informational competencies to demonstrate competencies with infant through adult populations. There is obviously close correspondence between each core course and concurrent practicum, as evidenced by specific requirements in the practica. For example, in the initial practicum trainees are required to replicate research projects that have generated specific characteristics of the severely and profoundly retarded and support or refute the research findings. In the diagnostic practicum, trainees must compare and contrast assessment techniques and/or instruments and determine their applicability to various subsets of the SMR/PMR population (e.g., ambulatory versus nonambulatory). In conjunction with the management course, the trainees conduct and evaluate a comprehensive behavior change project. In the instructional systems practicum, trainees develop and implement a systems approach (e.g., criterion-referenced, trials-to-criterion, etc.) to instruction in at least one area, and collect formative and summative data on SMR/PMR individuals participating in that system. Competencies for coursework and practicum are summarized in Table 1.

The third component of the SMR/PMR Graduate Program is the *preservice/inservice* coupling. It should be apparent that two types of individuals are in need of teacher training. First are those individuals who desire to work with severely and profoundly retarded but who need comprehensive training in this area (preservice personnel). Second are those who are currently working with this population but who require additional training or retraining (inservice personnel). In this program, preservice personnel are coupled with inservice personnel both in core courses and practica. This provides not only divergent practicum opportunities for the preservice personnel but also a close working relationship between the university and programs which serve the severely/profoundly retarded.

Program Implementation

In addition to the four core courses and four core practica there are various courses (without practica) in the areas of the multiply handicapped, child development and educational research, creating a total of 42 hours of graduate study. The reason for the former area's inclusion in the program is due to the abundance of conjunctive handicapped conditions (e.g., auditory, visual, and motoric impairments) that occur with the severely and profoundly retarded. In that research implementation and understanding is an important facet of the program; coursework in this area is also necessary.

Due to the cyclical design of the program, at least two years of graduate study is mandated for all teacher trainees. However, the design of the program makes it possible for both preservice and inservice personnel to complete the total program in as little as 2½ years. Preservice personnel may complete additional required coursework outside of the core areas during any semester or summer session. Inservice personnel are only required to complete one core course and concurrent practicum per semester. The additional required coursework is completed during summer sessions.

TABLE 1

Coursework and Practicum Competencies for SMR/PMR

COURSE	PRACTICUM
Sp. Ed. 518 Problems of the Severely and Profoundly Retarded	Sp. Ed. 591 Practicum: Problems of the Severely and Profoundly Retarded
1. To be able to use textbooks and primary sources to locate characteristics of the SMR/PMR. 2. To be able to operationally (behaviorally) define the characteristics of the SMR/PMR. 3. To be able to trace the historical origins and types of treatment for the SMR/PMR. 4. To be able to identify local, state, and national agencies who fund and provide services to the SMR/PMR.	1. To reliably observe specific (targeted) behaviors of the SMR/PMR. 2. To reliably record in a systematic fashion the observed behaviors. 3. To compare *observed* behavior patterns of the SMR/PMR to the generalized behavioral characteristics as stated in the literature. 4. To replicate behavioral studies which have led to statements of generalized characteristics of the SMR/PMR. 5. To analyze the results of the replications as being supportive or nonsupportive of the initial study. 6. To interpret the results of the replication.
Sp. Ed. 503 Diagnostic Assessment and Evaluation of the Severely and Profoundly Mentally Retarded and Multiply Handicapped	Sp. Ed. 592 Practicum in Assessment of the Severely and Profoundly Retarded and Multiply Handicapped
1. To be able to reliably administer a variety of formal assessment scales which measure cognitive, psychomotor, and adaptive behavior. 2. To develop an informal assessment instrument based upon either the analysis of a task or behavior or the developmental pinpoints followed by nonhandicapped learners. 3. To be able to interpret the results of these formal and informal assessments so that short and long term goals can be written.	1. To assess the behavioral needs of the SMR/PMR and MH using formal diagnostic and assessment tools. 2. To assess the behavioral needs of the SMR/PMR and MH using informal and criterion-referenced instruments. 3. To develop short- and long-term developmental goals based upon the results of the assessment. 4. To determine the reliability of the assessment procedure and instrumentation used.
Sp. Ed. 506 Behavior Modification for the Severely and Profoundly Retarded and Multiply Handicapped	Sp. Ed. 593 Practicum in Behavior Management of the Severely and Profoundly Retarded and Multiply Handicapped
1. To be able to display an understanding of behavior modification programs from their initial to terminal phases. 2. To be able to depict relevant behaviors for change and to behaviorally define (target) these behaviors. 3. To be able to determine an observational strategy to employ based upon various targetted behaviors. 4. To be able to explain various modification procedures which have been used effectively with low functioning populations. 5. To be able to design a behavior modification project that will verify the effectiveness of the intervention strategy. 6. To be able to determine assessment procedures to be used to target behaviors and situations in conjunction with specified modification procedures. 7. To be able to write a program of maintenance through which a targetted behavior can be maintained after the initial phases of the intervention have terminated.	1. To select appropriate and to be able to use different observational strategies with specified target behaviors. 2. To reliably record observable behaviors over a baseline and implementation periods. 3. To systematically modify a target behavior by selecting a strategy which might involve either the manipulation of antecedent conditions or consequences. 4. To demonstrate the use of a variety of strategies, e.g. fading, reinforcement schedules, modeling, etc, which can be used to initiate or maintain a behavior. 5. To summarize in writing the procedures, results, and conclusions using a writing style which is compatible with that used in the professional literature.
Sp. Ed. 519 Instructional Systems for Educating the Severely and Profoundly Retarded.	Sp. Ed. 590 Practicum in Education the Severely and Profoundly Retarded and Multiply Handicapped
1. To be able to display an understanding of currently accepted learning and behavioral delivery systems which are currently employed with the SMR/PMR. 2. To be able to write lessons based upon a task analysis model and to be able to systematically vary stimuli in the lesson to maximize the probability of acquisitions of the skill or concept. 3. To prepare modules of instruction in several areas of programming appropriate for the SMR/PMR. 4. To assess the effectiveness of present programming using formative and summative evaluation techniques.	1. To define the programming needs of the SMR/PMR and MH. 2. To develop programming steps based upon a task analytical model in appropriate programming areas. 3. To implement and objectively monitor on a daily basis the success and failure of individual program of instruction. 4. To use sound principles of instruction when implementing the preceding program. 5. To work in a teamlike fashion with paraprofessionals, OT's, PT's, psychologists, speech therapists, and other teachers in a transdisciplinary approach to programming.

Southern Illinois University's (Edwardsville Campus) Personnel Preparation Program for the Severely/Profoundly Handicapped

KIRBY P. DETRAZ
Southern Illinois University — Edwardsville

Funds to assist in the development of a severe/profound personnel preparation training program were acquired from the Bureau for the Education of the Handicapped May 1976. The preservice personnel preparation program is open to anyone interested in working with severely/profoundly handicapped pupils. The personnel preparation training program was developed in the areas of mental retardation and emotional disturbance during 1976-77, and the first of six specialized core courses will be offered winter quarter, 1978. The program focuses on theory, methods, and field-based experiences in teaching severely and profoundly handicapped children and adults in both public school and institutional settings. Student selection criteria was established and enrollment into the program was initiated January, 1977.

Student Selection Criteria:

1. Existing baccalaureate degree from an accredited college or university.
2. Overall grade point average in undergraduate work of at least a 3.5 (A=5.0). Applicants whose undergraduate average falls between 3.0 and 3.5 (A=5.0) are considered individually for admission to the degree program.
3. Prior or current successful working experience with trainable or severely/profoundly handicapped children or adults. (Recommended but not strict requirement since each potential student is considered individually.)
4. A minimum score of 40 on the Millers Analogy Test.
5. A sample of student's writing abilities.
6. A personal interview to determine whether the student's professional goals can be met by the training program.
7. Students being made aware of the nature of the instructional and field-based expectations of the training program.

General Competencies:

The severe/profound personnel preparation program focuses on preparing graduate students to assume responsibilities over and above those of the traditional classroom teacher. The goal is to bring the severely/profoundly handicapped to as close a point of independence as possible. The role of the teacher of the severly/profoundly handicapped is considered unique because of the varied and intensive qualities needed. Indeed, Sontag, Burke and York's (1973) reference to the relationship between levels of disability and instructional competence required is applicable to the development of severe/profound training programs, for they emphasized the fact that the more pronounced the disability, the more powerful and precise the skills required of the teacher. The SIU-E severe/profound program has hypothesized that teachers of the severely/profoundly handicapped must be knowledgeable in at *least* the following broad areas:

- Normal Child Development
- Legal Aspects
- Assessment
- Medical Aspects
- Contingency Management
- Principals of Instructional Procedures
- Individualized Educational Planning
  - Selecting target behaviors
  - Staffings
  - Writing annual and short-range goals
  - Data collection systems
- Interdisciplinary intervention
- Commercial Equipment and Materials
- Community Services
- Curriculum Needs
- Task Analysis
- Communication Alternatives and Techniques
- Parent Counseling
- Training Paraprofessionals and Uncertified Staff

In order to accomplish these broad competencies, the severe/profound personnel preparation training program consists of two major components: (1) the academic component and (2) the field-based component.

Academic Component:

The academic requirements are comprised of three groups of courses: (1) a general professional core required by SIU's school of education; (2) additional professional courses suggested by the department according to student background and needs (flexible) and (3) specialized core courses required by the severe/profound training program. The additional professional core may change according to student needs, however, the specialized core courses are required for all students. The program would require a total of 56 quarter hours or more depending upon student background. A *sample* graduate program in the severe/profound retardation area might include:

GENERAL PROFESSIONAL CORE (Required — 12 hours)

(Research Course)

EDFD 500 — Research Methods in Education — 4 hours

An introduction to the methods common to the various domains of educational inquiry with special emphasis on evaluation and utilization of educational research.

(Developmental Psychology and Learning Course)

PSYC 557 — Psychological Development of the Infant and Preschool Child — 4 hours

Basic developmental principals and concepts as they specifically relate to the infant and preschool child. Consideration of neurological and psychological assessment techniques as they relate to intervention methods for the preschool child.

(Social Foundations Course)

SPED 514 — Legal Aspects of Special Education — 4 hours

A detailed analysis of regulations, statutes, and court cases affecting the development and implementation of special education services for exceptional children.

ADDITIONAL PROFESSIONAL CORE (Flexible according to student needs — 28 hours or more required depending upon student background)

(Behavior Management) — 4 hours

An examination of the learning principles, evaluation methods and techniques of managing and modifying human behavior. The learning principles consist largely of knowledge based on the scientific inquiry of operant and respondant conditioning.

(Cognitive Assessment of the Child and Adolescent) — 4 hours

Training in the administration and interpretation of standard psychological techniques used to assess the cognitive abilities of children and adolescents.

(Counseling Parents of Exceptional Children) — 4 hours

The study of Prescriptive Parent Programming i.e., the education and training of parents of handicapped children. Course content includes the analysis of several models of parent education and training from the literature. Specific attention is given to (1) traditional and (2) innovative methods of parent-teacher communications, and (3) the individual parent-teacher conference and (4) parent-teacher discussion and training groups. The course is presented from a teaching-learning perspective.

(Atypical Child and Social Services) — 4 hours

A survey of social agencies contributing to the welfare and care of exceptional children. Emphasis given to services rendered and to methods of contact and cost. Visits made to agencies and institutions. Specialists invited to appear before the class.

(Language Development) — 4 hours

Examination of the development of speech and language in young children. Procedures for assessing language development and implications for intervention for children with language disorders. Auxiliary and alternative communication techniques will be examined.

(Medical Aspects) — 4 hours

Course does not exist as of this writing; however, cooperative efforts by Nursing and Special Education should result in a relevant course to the severe/profound area.

(Additional courses relevant to the severe/profound area may be selected from university offerings according to student needs.)

SPECIALIZED PROFESSIONAL CORE (Required — 12 hours)

SPED 510t — Problems and Characteristics of the Severely/Profoundly Retarded — 4 hours

Prepares students with basic informational competencies relative to programming for the severely/profoundly retarded. Course content includes historical background, etiology, and descriptors that characterize the population. Curriculum needs and demonstrated knowledge of assessment and diagnostic instruments is stressed. Systematic instructional processes in relation to basic issues will be discussed plus identification of locally provided services.

SPED 520t — Methods and Materials of the Severely/Profoundly Retarded — 4 hours

Prepares students with methodologies for instructional programming for the severely/profoundly retarded. Course content includes a review of principles of operant conditioning, including essentials necessary for a behavior change program, such as recording and graphing behaviors, selecting target behaviors, behavioral objectives, selected change procedures and a measurement system. Task analysis will be stressed and heavily utilized throughout various intervention strategies presented. Current methods in programming for the unique needs of the severely/profoundly retarded including maintenance and generalization of skills is presented.

SPED 530t — Seminar: Severely/Profoundly Retarded

The student interested in the severely emotionally disturbed would be assigned similar general and additional professional core courses, and the following specialized professional core emphasizing the severely emotionally disturbed area:

SPED 510a — Problems and Characteristics of Severely Emotionally Disturbed Children — 4 hours

The course is a study of the characteristics and problems of a small group of severely emotionally disturbed children diagnosed autistic, psychotic, and/or schizophrenic. Course content includes the study of definitions, symptoms, functional problems, incidence, prevalence, and diagnostic considerations, as well as a historical and contemporary

overview of services needed by this population. Various theories of etiology are analyzed in depth.

SPED 520a — Methods of Teaching Severely Emotionally Disturbed Children — 4 hours

The course is a study of the methods applied in the teaching of severely emotionally disturbed children diagnosed as autistic, psychotic, and/or schizophrenic.

SPED 590a — Seminar: Behavior Disorders

An indepth study and critical analysis of five major theories of the etiology of behavior disorders in children and their resultant interventions. The theories and interventions are (1) biophysical, (2) sociological, (3) behavioral, (4) ecological, and (5) psychodynamic. Consideration is given to major countertheoretical statements and service delivery systems related to the education and rehabilitation of children with behavior disorders.

Specialized core courses will be taught by special education personnel central to program delivery. Other special education courses are taught by special education personnel in the department, and psychology courses are taught by psychology professors.

Field-Based Component:

The program requires a minimum of 520 contact hours in as many settings as possible. Forty hours of participation are required in each of the three specialized core courses in addition to a practicum. Scheduling of specialized core courses will permit students to plan for sequential offerings in three quarters prior to their practicum. The practicum consists of 400 contact hours with severely/profoundly handicapped children or adults in either a public school, institution, or private agency. After participation experiences, students will be expected to meet specific competencies while in participation and practicum sites.

Participation/Practicum Hours:

Course	*Field Hours*
SPED 510t — Problems and Characteristics of S/P Handicapped	40 hrs.
SPED 520t — Methods and Materials of S/P Handicapped	40 hrs.
SPED 590t — Seminar: S/P Handicapped	40 hrs.
SPED 577 — S/P Practicum	400 hrs.
TOTAL	520 hrs.

More than 20 practicum sites have already been identified in and aroud the St. Louis area and 8 of these have welcomed the idea and requested practicum students.

SIU-E's severe/profound personnel preparation training program is in the planning stage, and the procedures outlines are tentative and susceptible to change. Several areas are being considered for change as of this writing, and the special education personnel would appreciate any ideas from readers who wish to share information.

The Severe Behavioral Handicaps Training Program: University of Illinois at Urbana-Champaign[1]

BARBARA WILCOX
University of Illinois, Urbana

A variety of contingencies are currently operating to effect changes in service delivery and training patterns in special education. Recent litigation has undeniably produced radical changes in the field, especially in the delivery of programs to the severely handicapped citizen. Landmark cases such as *PARC v. Pennsylvania* (1971) and *Mills v. Board of Education of the District of Columbia* (1972) have established that all children, regardless of the nature or degree of their handicap, have the right to a public education and may not be excluded from programs of education and training because of insufficient funds. Children who have been excluded from public schools because they "are not toilet trained; aggress toward others; do not attend to even the most pronounced social stimuli; self mutilate; ruminate; do not walk, speak, hear, or see; manifest durable and intense temper tantrums; are not under even the most rudimentary forms of verbal control; do not imitate; manifest minimally controlled seizures; and/or have extremely brittle medical existences" (Sontag, Burke, & York, 1973) are now to be provided with appropriate educational programs. The precedent established by *PARC* and *Mills* and the impetus supplied by pending litigation has placed new and dramatic demands on the special education community to produce personnel who can generate quality educational services for these severely handicapped.

The following assumptions serve to focus the Severe Behavioral Handicaps (SBH) training program at the University of Illinois:

1. Etiological labels as they have been developed for use in special education in general, and to apply to the severely handicapped in particular, are at best nonfunctional and perhaps detrimental to the development and happiness of the children being labelled.
2. All clients can benefit from educational programs. Furthermore, those educational programs should take place in the least restrictive environment feasible and should emphasize the development of academic, social, and vocational competence.
3. There exists a direct relationship between the level of the client's disability and the level of instructional competence required of his teachers: the more pronounced the disability, the more powerful and precise are the skills required of the teacher (Sontag, Burke, & York, 1973).
4. Both curriculum and the necessary competencies of a teacher of the severely handicapped are defined by the needs of the students served. Teachers must be prepared to toilet train, to eliminate self-destructive and self-stimulatory behaviors, to teach eye contact and imitative responding, to develop community survival skills, and so on. Ultimately, the success of the teacher must be evaluated on the basis of change in client behavior. To say that teacher competencies must be generated on the basis of needs of the clients in this case produces a somewhat paradoxical situation: when the need demonstrated by the severely handicapped define competencies which become the goals of university teacher training programs, the handicapped are in fact helping to educate the special educators.
5. Since severely handicapped are being served in many cases by untrained or undertrained teachers and non-educational personnel (nurses, ward staff), the need for in-service training is great. In response to this need, training programs should be made maximally available for the retraining of those currently responsible and for new personnel to serve the severely/multiply handicapped. At minimum this necessitates the availability of training programs to part-time students.
6. Teachers of the severely handicapped must be prepared to provide needed services traditionally supplied by ancillary school personnel (such as speech therapists, music and art therapists, and school psychologists) since in many cases, these disciplines are not yet focusing on work with the severely handicapped.
7. The role of programmer/teacher of clients with severe functional handicaps is exceedingly complex and extends far beyond the traditional teachers' role. While direct instruction remains a major part of the role, it is not its entirety. In order to effect substantial changes in the lifestyle of the severely handicapped, the teacher must be concerned with normalizing the interactions of society with the handicapped, with increasing both the amount and quality of services to the handicapped, with modifying the physical and educational environments to develop and support learning, and with the training of parents, professional, and non-professional personnel to maintain educational gains in non-school environments. The teacher assumes responsibility for advocacy and indirect service in addition to direct instructional duties.

As more states mandate services for the severely handicapped, State Departments of Education and

1. Inquiries regarding the undergraduate SBH program should be directed to George Karlan, 288 Education, University of Illinois, Urbana, IL 61801; those interested in admission to the master's program should contact Barbara Wilcox at the same address.

local school districts will require increased numbers of teachers for these students. Since educational services to this population are relatively new, those who have actually acquired the skills necessary to work with the severely handicapped should be somewhat unique. While the goal of the SBH program is to train personnel to serve the severely handicapped in public school settings (see 2 above), graduates should also be well prepared to assume leadership roles in teaching, training, and administration in a variety of settings: private schools, home training programs, sheltered workshops, group homes, residential centers, day care activity centers, local ARC's, and State Departments of Education.

Description of the Program

The Severe Behavioral Handicaps Program is a field-based training program designed to prepare personnel to work with clients who are labeled severely handicapped (moderately, severely, or profoundly retarded; severely disturbed; autistic; multiply handicapped). These individuals have frequently been excluded from public school programs or have failed to receive appropriate educational programs in alternative placements. The SBH program will include University work and field experience with both school-aged and adult handicapped, and will develop skills necessary for both direct and indirect service to severely handicapped populations.

Specific objectives of the training program are (1) to produce teachers who are competent in criterion-referenced assessment, task analysis, curriculum selection and development, programming, and behavior management, (2) to develop curriculum for the severely handicapped in self-help, social, motor, language, cognitive, and vocational skill areas, and (3) to demonstrate that severely handicapped children and adults can make significant behavioral gains when provided with appropriate programs. The performance criteria outlined above constitute the basic outcomes of the training program.

The SBH program is available to students at both the undergraduate and graduate levels. The characteristics which distinguish the master's from the baccalaureate level program are (1) the greater emphasis on the development of skills for indirect service delivery (e.g., consultation, parent training) at the graduate level, and (2) the provision for supervised practica with adult as well as school-aged handicapped in the graduate program.

THE SBH PROGRAM IS

public school oriented. There is strong commitment to the training of personnel who can effectively handle severely handicapped students within the public school system. To this end, the program and the Department of Special Education have worked with local directors of special education to establish a public school cooperative to serve approximately 40 students previously served in two private school programs. This East Central Cooperative for the Severely/Profoundly Handicapped will begin August, 1977; will be completely administered by the public schools; and will serve as an important training site for the SBH program.

competency-based. The training sequence is organized around a set of performance competencies which have been developed to describe those skills that program graduates are expected to demonstrate upon the completion of training. The general competency clusters include (1) Referral, evaluation, and assessment, (2) Team planning, (3) Instructional planning and implementation, (4) Medical and physical management, (5) Consultation, training, and indirect service, and (6) Student and program advocacy.

field-based. During each semester trainees are enrolled in a special education practicum and spend from 10 to 20 hours per week in educational or vocational settings serving moderately, severely, and profoundly handicapped children and adults. Trainees are extensively supervised by cooperating teachers and SBH program supervisors.

data-based. Course work and competency statements emphasize the development of skills in direct instruction, direct and frequent measurement of pupil progress, and data-based decision-making and program modification.

experimental. The program, courses, and competencies have undergone and will continue to undergo revision based on trainee performance, trainee and employer feedback, and advances in the technology of instruction of the severely handicapped.

These program characteristics coupled with limited program size (a maximum of 20 undergraduates and 15 master's level students per year) and University and community resources should result in quality teacher training and increased services to severely handicapped citizens.

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List of Participants

CHARLES ATKINSON
Department of Special Education
Western Washington University
Bellingham, Washington 98225

ROBIN BECK, M.D.
Center for the Severely Handicapped
CDMRC, WJ10
University of Washington
Seattle, Washington 98105

TOM BELLAMY
Center on Human Development
901 East 18 Street
Eugene, Oregon 97403

JANE LEE BIRKENHOLZ
Illinois State University
Department of Special Education
Normal, Illinois 61761

BARBARA BRACKMAN
Chicago Early Childhood Education Project
Illinois Institute of Developmental Disabilities
1640 West Roosevelt
Chicago, Illinois 60608

WILLIAM BRICKER
Department of Special Education
Kent State University
Kent, Ohio 44240

LOU BROWN
University of Wisconsin
Department of Studies of Behavioral Disorders
School of Education
2605 Marsh Lane
Madison, Wisconsin 53706

IRENE CARNEY
Department of Special Education
University of Illinois at Urbana-Champaign
Urbana, Illinois 61801

GRACE CLOBUCIAR
Department of Special Education
University of Illinois at Urbana-Champaign
Urbana, Illinois 61801

SISTER ROSEMARY CONNELLY
Misericordia Home
6300 North Ridge
Chicago, Illinois 60660

ELLEN CORLEY
Department of Special Education
University of Illinois at Urbana-Champaign
Urbana, Illinois 61801

MARGARET CREEDEN
128 Jerome
Bolingbrook, Illinois 60429

TIM CROWNER
Specialized Educational Services
Madison Public Schools
Badger School
501 East Badger Road
Madison, Wisconsin 53713

KIRBY PAUL DETRAZ
Department of Special Education
Southern Illinois University
Edwardsville, Illinois 62025

LARRY DEW
Director of Special Education
2801 Madison Avenue
Granite City, Illinois 62040

REBECCA DUBOSE
George Peabody College
Department of Special Education
Box 326
Nashville, Tennessee 37203

NANCY FIEBER
Myer Children Rehabilitation Institute
444 South 44th Street
Omaha, Nebraska 68131

JOHN FILLER
Chicago Early Childhood Education Project
Illinois Institute of Developmental Disabilities
1640 West Roosevelt
Chicago, Illinois 60608

CINDY FULK
1504 North Franklin Avenue
Bloomington, Illinois 61701

GAIL FUNDAKOWSKI
Chicago Early Childhood Education Project
Illinois Institute of Developmental Disabilities
1640 West Roosevelt
Chicago, Illinois 60608

MARC GOLD
Institute on Child Behavior and Development
51 Gerty Drive
Champaign, Illinois 61820

MICHAEL HAGEN
Department of Specialized Educational Services
Illinois Office of Education
100 North First Street
Springfield, Illinois 62777

CHERI HAMMANN
Department of Specialized Educational Services
Illinois Office of Education
100 North First Street
Springfield, Illinois 62777

MICHAEL LEWIS
Warren Achievement School
1220 East Second Avenue
Monmouth, Illinois 61462

GAIL LIEBERMAN
Department of Specialized Educational Services
Illinois Office of Education
100 North First Street
Springfield, Illinois 62777

FRED ORELOVE
Department of Special Education
Room 188 College of Education
University of Illinois at Urbana-Champaign
Urbana, Illinois 61801

CAROL PETERSON
Chicago Early Childhood Education Project
Illinois Institute of Developmental Disabilities
1640 West Roosevelt
Chicago, Illinois 60608

ALLAN REPP
Department of Special Education
Northern Illinois University
DeKalb, Illinois 60115

ROBERT SEDLAK
Department of Special Education
Northern Illinois University
DeKalb, Illinois 60115

CINDY STONE
Texas Woman's University
School of Physical Therapy
7919 Walnut Hill Lane
Dallas, Texas 75230

ROBERT VAN DYKE
South Metropolitan Association
250 West Sibley Boulevard
Dolton
P.O. Harvey, Illinois 60426

BETTY VINCENT
Department of Studies in Behavioral Disabilities
University of Wisconsin
2605 Marsh Lane
Madison, Wisconsin 53706

TIMM VOGELSBERG
Department of Special Education
Room 188 College of Education
University of Illinois at
Urbana-Champaign
Urbana, Illinois 61801

BARBARA WILCOX
Department of Special Education
Room 188 College of Education
University of Illinois at
Urbana-Champaign
Urbana, Illinois 61801

BOB YORK
Center for Special Education
University of Vermont
Burlington, Vermont 05401

Program Planning Committee

BOBBIE REGULY
Department of Specialized
Educational Services
Illinois Office of Education
100 North First Street
Springfield, Illinois 62777

CINDY FULK
1504 North Franklin Avenue
Bloomington, Illinois 61701

PHIL VEDOVATTI
Vision Consultant
West Suburban Association
141 Green Valley Drive
Lombard, Illinois

JULIE INWOOD, Teacher
1215 Thomas Street
Homewood, Illinois

MICHAEL HAGEN
Department of Specialized
Educational Services
100 North First Street
Springfield, Illinois 62777

BARBARA WILCOX
Department of Special Education
University of Illinois at
Urbana-Champaign
College of Education
Room 188
Urbana, Illinois 61801

LARRY VAN WINKLE
The Department of Mental Health/
Developmental Disabilities
Springfield, Illinois

Editorial Committee

BARBARA WILCOX
Department of Special Education
University of Illinois at
Urbana-Champaign
Room 188
College of Education
Urbana, Illinois 61801

TIMM VOGELSBERG
Department of Special Education
University of Illinois at
Urbana-Champaign
Room 188
College of Education
Urbana, Illinois 61801

FRANCEY KOHL
Department of Special Education
University of Illinois at
Urbana-Champaign
Room 188
College of Education
Urbana, Illinois 61801

BOBBIE REGULY
Department of Specialized
Educational Services
Illinois Office of Education
100 North First Street
Springfield, Illinois 62777

MICHAEL HAGEN
Department of Specialized
Educational Services
Illinois Office of Education
100 North First Street
Springfield, Illinois 62777